Polychlorinated Biphenyl Analytical Results:
Results of Analysis on Fish Flesh

The chemical analysis of edible fish flesh, except where whole fish are indicated on the attached data sheets, for polychlorinated biphenyls (PCB's) was conducted at three laboratories on those fish obtained at several stations given below. The immediate supervisor of all analysis at each Laboratory is also provided.

Laboratory Location	Supervisor	Water	Station(s)
NYS Dept. of Environmental Conservation Rome Pollution Laboratory 8314 Fish Hatchery Road Rome, NY 13440	Earl J. Harris	Hudson R.	Above Corinth Above Glens Falls At Ft. Edward-below G.E. 5 miles below Ft. Edward Stillwater Catskill-Trib. 193 Kingston-Rhinecliff Bridge Mouth of Wappinger Creek Mouth of Rondout Creek Mouth of Esopus Creek Tappan Zee Bridge George Washington Bridge area
NYS Dept. of Agriculture and Markets State Food Laboratory Laboratory Building #7 1220 Washington Avenue Albany, New York 12235	Dr. Elmer George, Jr. Director	Hudson R. Mohawk R. Rondout Cr.	Waterford Little Falls Below Schenectady Bloomington
NYS Dept. of Health Division of Laboratories and Research Griffin Laboratory Guilderland, NY 12084	Dr. Brian Bush	Walloomsac/ Hoosic R.	Walloomsac River in Hoosic Hoosic River above Johnsonville

A copy of the analytical procedures used by each of the Laboratories is attached as Appendix A. The calculation sheets, analytical reports and chromatographs pertaining to the analysis of fish at the above stations are available at each respective laboratory for inspection.

The data relating to dates of collection, location of collections, species of fish and numbers of each species of fish analyzed, length and weight of each fish, identification of each sample of fish, the PCB content of the fish analyzed, and if provided, the oil and DDT content of the fish analyzed, is given on the attached tables numbered 1 thru 21 .

Comments on data contained in Tables 1 thru 21.

Fish analyzed by the Rome Pollution Laboratory in the initial sampling (July 27 thru September 5, 1975) were weighed and measured by the Laboratory and, in most instances, by the Regional personnel who captured the fish.

The lengths and weights reported on the attached data sheets are those obtained by the Rome Pollution Laboratory and converted to decimal form. This procedure was used so as to obtain consistency in reporting of these measurements. The lengths and weights reported on the data sheets do not necessarily correspond with those obtained and reported by the Regional personnel collecting the fish samples. This is due to shrinkage of the fish as a result of freezing prior to analysis. The length and weight information on fish analyzed by the Departments of Health and Agriculture and Markets are the data reported by the Regions collecting the fish samples and converted to decimal form where appropriate.

Lengths and weights reported on the data sheets for the second sampling of fish (September 16-18, 1975) are those obtained by the regional personnel and converted to decimal form, where appropriate.

Hudson River PCB Analysis Results
(Analysis by Rose Pollution Laboratory)

TABLE 1

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242//016	PPM as Aroclor 1254	Total PCB's	PPM DDT/ DDE	% Oil	Remarks
Smallmouth bass (Micropterus dolomieu)	8/20/75 8/21/75	9/2/75	Above Corinth	5s Hud-Comp 5			9.1	0.35	0	Trace	Trace			Composite of 2
							9.2	0.37						
				5s Hud Comp 4			11.0	0.64	0	Trace	Trace			Composite of 2
							11.4	0.70						
				5s Hud Comp 1			11.0	0.62	0	Trace	Trace			Composite of 3
							11.0	0.66						
							10.6	0.64						
				5s Hud Comp 3			6.7	0.12	0	Trace	Trace			Composite of 3
							7.1	0.17						
							7.3	0.17						
				5s Hud Comp 6			7.5	0.20	0	Trace	Trace			Composite of 2
							7.7	0.22						
				5s Hud Comp 2			10.0	0.44	0	Trace	Trace			Composite of 4
							10.0	0.45						
							10.0	0.48						
							10.6	0.55						
White sucker (Catostomus commersoni)	8/20/75 8/21/75	9/2/75	Above Corinth	5s Hud 17			14.6	1.67	0	Trace	Trace			
				5s Hud 18			18.5	3.02	0	Trace	Trace			
Yellow perch (Perca flavescens)	8/20/75 8/21/75	9/2/75	Above Corinth	5s Hud Comp 7			6.7	0.16	0	Trace	Trace			Composite of 5
							6.9	0.14						
							7.1	0.14						
							7.1	0.15						
							7.1	0.16						

MONS 061210

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 2

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Arcolor 1242/1016	PPM as Arcolor 1254	Total PCB's	PPM DDT/ DDE	% Oil	Remarks
Smallmouth bass (Micropterus dolomieu)	7/24-25/75	8/11/75	Above Glens Falls	3-Hud-75-up			11.0	0.56	0	Trace	Trace			
				4-Hud-75-up			10.6	0.46	0	Trace	Trace			
				5-Hud-75-up			9.4	0.35	0	Trace	Trace			
				6-Hud-75-up			9.4	0.31	0	Trace	Trace			
				8-Hud-75-up			9.0	0.30	0	Trace	Trace			Composite of 3
				9-Hud-75-up			8.7	0.21						
				7-Hud-75-up			8.3	0.26						
				10-Hud-75-up			7.5	0.16	0	Trace	Trace			Composite of 3
				11-Hud-75-up			4.7	0.13						
				12-Hud-75-up			4.3	0.10						
Walleye (Stizostedion vitreum)	7/24-25/75	8/11/75	Above Glens Falls	2-Hud-75-up			15.4	1.03	0	Trace	Trace			
				1-Hud-75-up			15.0	1.05	0	Trace	Trace			
Yellow perch (Perca flavescens)	7/24-25/75	8/11/75	Above Glens Falls	16-Hud-75-up			11.8	0.73	0	Trace	Trace			
				15-Hud-75-up			11.4	0.67	0	Trace	Trace			
				13-Hud-75-up			11.0	0.57	0	Trace	Trace			
				17-Hud-75-up			10.8	0.60	0	Trace	Trace			
				14-Hud-75-up			10.6	0.55	0	Trace	Trace			
				26-Hud-75-up			10.2	0.61	0	Trace	Trace			
				19-Hud-75-up			9.8	0.55	0	Trace	Trace			
				21-Hud-75-up			9.8	0.45	0	Trace	Trace			
				22-Hud-75-up			9.0	0.42	0	Trace	Trace			
				18-Hud-75-up			7.9	0.43	0	Trace	Trace			
White sucker (Catostomus commersoni)	7/24-25/75	8/13/75	Above Glens Falls	41-Hud-75-up					0	Trace	Trace			
		9/2/75	Above Glens Falls	42-Hud-75-up					0	Trace	Trace			

MONS 061211

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 3

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242//016	PPM as Aroclor 1254	Total PCB's	PPM DDT/ DDE	% Oil	Remarks
Walleye (Stizostedion vitreum)	9/18/75	10/1/75	At Fort Edward below G.E.	4-Hud-RI-Comp		6A8286	6.4	0.12	104.21	28.29	132.50	2.81	4.25	Composite of 6 whole fish
						6A8285	6.6	0.12						
						6A8288	6.7	0.12						
						6A8289	6.8	0.12						
						6A8283	6.9	0.16						
						6A8284	7.2	0.16						
				3-Hud-RI-Comp		6A8293	7.1	0.16	81.12	41.80	122.92	7.63	5.52	Composite of 3 whole fish
						6A8275	7.2	0.16						
						6A8292	7.5	0.19						
						6A8278	7.6	0.19						
						6A8276	7.8	0.19						
						6A8279	7.8	0.19						
						6A8277	8.0	0.22						
						6A8281	8.3	0.22						
				5-Hud-RI-Comp		6A8291	10.7	0.47	9.68	6.31	18.19	0.96	1.80	Composite of 4 fish fillets
						6A8293	11.3	0.53						
						6A8352	11.3	0.56						
						6A8290	11.7	0.66						
Yellow perch (Perca flavescens)	9/18/75	10/1/75	At Fort Edward below G.E.	6-Hud-RI-Comp		6A675	6.8	0.16	61.10	18.24	79.34	2.20	1.57	Composite of 10
						6A8298	6.8	0.19						
						6A8299	6.8	0.19						
						6A682	6.9	0.22						
						6A678	7.1	0.22						
						6A8295	7.2	0.19						
						6A8297	7.4	0.22						
						6A668	7.4	0.22						
						6A8296	7.7	0.22						
						6A8294	7.8	0.25						

MONS 061212

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 4

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242//016	PPM as Aroclor 1254	Total PPM's	PPM DDT/ DDE	% Oil	Remarks
Rock bass (Ambloplites rupestris)	7/24-25/75	8/13/75	Fort Edward below G.E.	56 Hud-75-DM 57 Hud-75-DM					27.35					Composite of 2
Alewife (Alosa pseudoharengus)	7/24-25/75	8/13/75	Fort Edward below G.E.	55 Hud-75-DM					20.35					

MONS 061213

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 5

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PCB's	PPM DDT/DDE	% Oil	Remarks
Yellow Perch (Perca flavescens)	9/18/75	10/1/75	At Fort Edward	8-Mud-RI-Comp			4.7 4.8 4.8 4.8 4.9 5.0 5.1 5.4 5.5 5.8		236.42	61.68	299.50	7.67	5.70	Composite of 10 whole fish; not tagged
				7-Mud-RI-Comp			3.0 3.1 3.2 3.5 3.5 3.5 3.6 3.7 3.7 3.8 3.8 3.8 3.8 3.9 4.2 4.3 4.3 4.4 4.4 4.7		128.33	24.27	152.60	3.84	3.68	Composite of 20 whole fish; not tagged

MONS 061214

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 6

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242//016	PPM as Aroclor 1254	Total PPM's	PPM 2nd/ ???	% fat	Remarks
White sucker (Catostomus commersoni)	9/18/75	9/30/75	At Fort Edward	1 Hud-RI-Comp		6N8265	11.6		82.88	48.57	131.45	5.64		Composite of
						6N8267	13.1							
						6N8266	13.2							
						6N8268	14.2							
				2 Hud-RI-Comp		6N8274	7.8		5.85	2.72	11.55	0.41		Composite of
						6N8269	9.1							
						6N8272	9.1							
						6N8271	8.5							
						6N8273	8.6							

MONS 061215

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

Table 7

Fish	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PPM's	PPM DDT/ DDE	% Fat Content
Smallmouth bass (Micropterus dolomieui)	7/28-29/75	8/11/75	5 mi. below Fort Edward	23-Hud-75-DS			11.0	0.74	100.27	22.64	122.91		
White (Hexagenia limbata)	7/28-29/75	8/11/75	5 mi. below Fort Edward	24-Hud-75-DS			13.4	0.87	157.27	20.74	178.01		
White sucker (Catostomus commersoni)	7/28-29/75	8/11/75	5 mi. below Fort Edward	51-Hud-75-DS					51.39				
				48-Hud-75-DS					47.57				
				50-Hud-75-DS					22.05				
				54-Hud-75-DS					20.80				
	7/28-29/75	9/2/75	5 mi. below Fort Edward	52-Hud-75-DS					29.74	8.86	38.60		
				49-Hud-75-DS					28.03	8.13	36.16		

MDNS 061216

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 2

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PCB's	PPM DDT/ DDE	% (oil)	Remarks
Yellow perch (Perca flavescens)	9/17/75	9/26/75	5 miles below Fort Edward	1 Hud-R-Comp-9-18		627801	6.5	0.16	84.31	18.95	103.26	2.37	3.52	Composite of 6 whole fish
						627802	6.5	0.16						
						627804	6.5	0.16						
						627807	6.6	0.16						
						627800	6.7	0.16						
						627808	6.8	0.19						
				2-Hud R Comp 9-18		627806	7.5	0.25	35.54	15.01	50.55	1.71	3.53	Composite of
						627805	7.6	0.25						
						627809	7.7	0.28						
				8 Hud-R Comp-9-18			3.2		88.18	34.21	122.39	3.90	4.32	Composite of small fish, not tagged
							3.2							
							3.3							
							3.3							
							3.4							
							3.4							
							3.4							
							3.4							
							3.5							
							3.5							
							3.5							
							3.7							
							3.7							
							3.7							
							3.8							
							3.8							
							3.9							
							4.0							
							4.2							
							4.2							
Walleye (Stizostedion vitreum)	9/16/75	9/19/75	5 miles below Fort Edward	6R699		61699	9.9	0.41	5.19	5.70	10.89	0.35	1.14	
	9/17/75	9/19/75		6R697		6R697	11.5	0.62	7.13	5.56	12.69	0.41	1.49	

MONS 061217

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 9

Exhibit	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242//1016	PPM as Aroclor 1254	Total PCB's	PPM DDT/DDE	% Oil	Remarks
Brown bullhead (Ictalurus nebulosus)	9/16/75	9/26/75	5 miles below Ft. Edward	3 Mud R Comp 9-18		6R665	10.0	0.44	73.24	36.38	109.62	4.23		Composite of 3
						6R657	10.0	0.66						
						6R661	10.6	0.63						
				4 Mud R Comp 9-18		6R669	11.3	0.78	85.30	38.52	123.82	3.81		Composite of 2
						6R698	11.4	0.78						
White sucker (Catostomus commersoni)	9/16/75	9/29/75	5 miles below Ft. Edward	7 Mud R Comp 9-18		6R696	10.2	0.59	36.03	12.85	48.88	1.35	1.88	Composite of 4
						6R680	10.7	0.53						
						6R663	10.9	0.59						
						6R677	11.0	0.62						
				6 Mud R Comp 9-18		6R694	13.0	1.25	78.00	23.79	101.79	3.47	2.92	Composite of 2
						6R683	13.8	1.38						
				5 Mud R Comp 9-18		6R691	14.0	1.44	57.54	41.10	98.64	2.58	5.31	Composite of 2
						6R661	14.5	1.44						

MONS 061218

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 10

Species	Date Collected	Date Analysis Received	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242//1016	PPM as Aroclor 1254	Total PCB's	PPM DDT/ DDE	% Oil	Remarks
Largemouth bass (Micropterus salmoides)	9/17/75	10/1/75	Stillwater	1	SUH-Comp	4J2977	13.4	1.41	24.85	15.97	40.82		7.32	Composite of 2
						4J2985	12.9	1.53						
				2	SUH-Comp	4J2972	5.7	0.13	14.31	9.84	24.15		4.59	Composite of 4 whole fish
						4J2979	5.9	0.16						
						4J2971	6.0	0.09						
						4J2965	6.2	0.16						
				3	SUH-Comp	4J2974	3.6	0.03	8.99	6.99	15.98		2.42	Composite of 4 whole fish
						4J2986	4.2	0.06						
						4J2958	5.2	0.09						
						4J2957	5.6	0.12						
	9/17/75	10/2/75	Stillwater	4J2970		4J2970	9.6	0.36	12.40	4.44	16.84	0.56	3.93	
				4J2956		4J2956	7.7	0.34	14.91	5.98	20.89	0.73		
American eel (Anguilla rostrata)	9/17/75	10/2/75	Stillwater	4J3000		4J3000	17.0	0.31	11.28	11.07	22.35		5.74	
				4J2975		4J2975	32.0	3.12	403.38	155.87	559.25	18.68	10.04	Very Oily
Brown bullhead (Ictalurus nebulosus)	9/17/75	10/1/75	Stillwater	4J1961		4J2961	9.0	0.34	4.66	7.99	12.65		3.35	
White sucker (Catostomus commersoni)	9/17/75	10/1/75	Stillwater	5	SUH-Comp 1	4J2969	7.0	0.16	10.34	5.94	16.28	0.53	1.87	Composite of -
						4J2954	7.2	0.19						
						4J2990	7.6	0.19						
						4J2983	7.8	0.25						
						4J2964	13.3	1.00	154.28	35.92	190.20	5.69	5.71	Composite of 2
	9/17/75	10/1/75	Stillwater	6	SUH-Comp	4J2980	15.0	1.63						

MCNS 061219

TABLE 11

Hudson River PCB Analysis Results
(Analysis by Department of Agriculture and Markets)

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PCB's	PPM DDT/ PCB	% Oil	Remarks
ellmouth bass (ictropterus lomiqui)	8/26/75 8/27/75	9/5/75	Waterford	10691	5S (1)	6R1410 6R1437 6R1411 6R1433 6R1436 6R1421	8.7 9.9 10.1 10.1 10.5 10.7		27.0	14.5	41.5			Composite of 6
	8/26/75	9/5/75	Waterford	10692	5S (2)	6R1420 6R1419 6R1418 6R1417	11.5 12.9 13.3 14.0		36.0	17.5	53.5			Composite of 4
ite sucker (ntostomus mmersoni)	8/26/75 8/27/75	9/5/75	Waterford	10693	5S (3)	6R1430 6R1424 6R1429 6R1425 6R1426 6R1405	8.8 11.0 11.7 11.8 12.1 12.5		20.3	7.9	28.2			Composite of 6
	8/26/75 8/27/75	9/5/75	Waterford	10694	5S (4)	6R1432 6R1438 6R1409 6R1423 6R1431	15.5 15.7 16.5 16.5 16.5		36.0	12.9	48.9			Composite of 5
lleye (isostedion itreum)	8/26/75	9/5/75	Waterford	10695	5S (5)	6R1416 6R1415	16.1 18.5		23.3	9.1	32.4			Composite of 2

MONS 061220

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 12

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PCB's	PPM DDT/ DDE	% Oil	Remarks
Smallmouth bass (Micropterus dolomieui)	8/1/75	8/11/75	Catskill Trib. 193	26-Hud-4-75			11.4	1.01	13.76					
Grass pickerel (Esox niger)	8/1/75	8/11/75	Catskill Trib. 193	25-Hud-4-75			17.7	1.76	6.68					
Yellow perch (Perca flavescens)	8/1/75	8/11/75	Catskill Trib. 193	28-Hud-4-75			7.9	0.24	4.18					
				29-Hud-4-75			7.5	0.19						Composite of 2
White perch (Morone americana)	8/1/75	8/11/75	Catskill Trib. 193	27-Hud-4-75			10.2	0.61	8.47					
				38-Hud-4-75			11.0	0.34						
				39-Hud-4-75			8.3	0.32	10.67					
				40-Hud-4-75			7.9	0.32						Composite of 3
				37-Hud-4-75			8.7	0.38						
				36-Hud-4-75			8.3	0.33	23.74					
				35-Hud-4-75			7.5	0.28						Composite of 3
				33-Hud-4-75			7.1	0.20	16.20					
				34-Hud-4-75			6.7	0.19						Composite of 2
				32-Hud-4-75			6.3	0.14						
				30-Hud-4-75			5.9	0.13	12.23					
				31-Hud-4-75			5.5	0.11						Composite of 3

MDNS 061221

Hudson River PCB Analysis Results
(Analysis by Roma Pollution Laboratory)

TABLE 13

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PCB's	PPM Aver. PCB	% Oil	Remarks
Striped bass (Morone saxatilis)	8/7/75	9/2/75	Mouth of Roodout Creek	2D219 2D218		2D219	10.4	0.44	C	4.03	4.98	0.49		
						2D218	20.4	3.23	0	7.01	7.01	1.37		
Largemouth bass	8/7/75	9/2/75	Mouth of Roodout Creek	2D241 2D238 2D242		2D241	11.6	0.56	0	1.73	1.73	0.38		
						2D236	12.2	1.06	0	4.87	4.87	0.49		
						2D242	13.7	1.41	0	7.65	7.65	0.83		
						2D237	15.7	2.38	0	3.71	3.71	0.67		
						2D236	15.7	2.50	0	5.37	5.37	0.79		
						2D240	17.7	3.67	0	8.52	8.52	1.13		
White perch (Morone americana)	8/7/75	9/12/75	Mouth of Roodout Creek	Rud-R-Comp 1A		2D223	8.8	0.31	0	7.45	7.45	1.70	7.28	Composite of 4
						2D233	9.0	0.31						
						2D230	9.3	0.37						
						2D220	9.5	0.43						
				Rud-R-Comp 2A		2D226	7.4	0.23	0	8.12	8.12	1.60	8.23	Composite of 4
						2D228	7.4	0.19						
						2D231	7.5	0.22						
						2D234	7.8	0.24						
Yellow perch (Perca flavescens)	8/22/75	9/15/75	Mouth of Roodout Creek	Rud-R-Comp 4A		2C8498	8.6	0.262	0	5.28	5.28	1.08		Composite of 5
						2C8496	8.7	0.324						
						2D212	8.8	0.291						
						2D210	8.9	0.242						
						2D211	9.0	0.326						

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Hudson River PCB Analysis Results
(Analysis by Base Pollution Laboratory)

TABLE 14

Species	Date Collected	Date Analysis Received	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PCB's	PPM DDT/DDE	% Oil	Remarks
Largemouth bass (Micropterus salmoides)	8/6/75	8/22/75	Mouth of Wappingers Creek	2CB402		2CB402	12.5		19.73	4.01	23.74			
				2CB417		2CB417	14.1		10.73	3.35	14.08			
				2CB408		2CB408	19.0		17.99	5.19	23.18			
White perch (Morone americana)	8/6/75	8/22/75	Mouth of Wappingers Creek			2CB449	6.0		13.74	6.14	19.88			Composite of 5
						2CB436	6.3							
						2CB433	6.5							
						2CB439	6.6							
						2CB405	7.0							
						2CB429	7.0							
American eel (Anguilla rostrata)	8/6/75	8/22/75	Mouth of Wappingers Creek			2CB472	11.3		13.36	3.00	16.36			Composite of 3
						2CB457	11.4							
						2CB469	11.7							
						2CB479	14.3		41.69	10.42	52.11			Composite of 3
						2CB454	14.5							
						2CB454	17.3							
				2CB483		2CB483	17.8		123.61	53.64	177.25		> 27.0	
				2CB451		2CB451	26.9		14.11	4.94	18.95			
Striped bass (Morone saxatilis)	8/8/75	9/12/75	Mouth of Esopus Creek	2D24		2D24	14.2	0.94	0	6.62	6.62	0.86	4.95	
White perch (Morone americana)	8/8/75	9/12/75	Mouth of Esopus Creek	Mud R-Comp 3A		2D42	6.5	0.15	0	9.65	9.65	1.59		Composite of 4
						2D43	6.5	0.17						
						2D44	6.6	0.13						
						2D47	6.6	0.17						

MONS 061223

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 15

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PCB's	PPM BOT/ PCB	% Oil	Remarks
American shad (Alosa sapidissima)	5/21/73	9/18/73	Kingston-Rhinecliff Bridge	2C8363		2C8363	19.5	2.18	Trace	2.52	2.52	0.37		
				2C8369		2C8369	20.0	2.82	Trace	6.91	6.91	1.30		
				2C8370		2C8370	20.0	3.04	Trace	5.29	5.29	1.49		
				2C8353		2C8353	20.0	3.17	Trace	2.58	2.58	0.19		
				2C8366		2C8366	20.5	2.88	Trace	5.83	5.83	0.59		
				2C8364		2C8364	21.0	3.33	Trace	3.23	3.23	0.77		
				2C8356		2C8356	21.2	3.39	Trace	39.56	39.56	4.41		
				2C8354		2C8354	21.5	4.07	Trace	58.14	35.14	4.24		
				2C8365		2C8365	22.0	4.20	Trace	7.78	7.78	1.63		
				2C8355		2C8355	24.0	4.82	Trace	19.35	19.35	2.99		
	5/22/73	9/21/73	Kingston-Rhinecliff Bridge	2C8371 - 2C8372		2C8371 2C8372	20.0 21.5	3.30 3.37	22.91 58.13	Trace 9.22	22.91 67.35			
	5/22/73	9/18/73	Kingston-Rhinecliff Bridge	2C8367		2C8367	21.0	3.19	Trace	6.40	6.40	1.32		
	5/22/73	10/1/73	Kingston-Rhinecliff Bridge				21.0	3.10	23.40	9.68	33.08	3.52	0.65	Oil dark and t

MONS 061224

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 11

[illegible]pier	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PCB's	PPM DDT/ DDE	% Oil	Remarks
[illegible]ripped bass [illegible] [illegible]xsilus)	May 1975	7/24/75	Tappan Zee Bridge	206			22.8	5.98		37.80		4.39	13.56	
				259			24.4	7.08		6.75		1.52	7.12	
				256			24.8	6.80		7.93		1.69	5.26	
				254			32.6	14.74		3.25		0.98	5.93	
				269			37.4	20.24		6.53		2.07	9.41	
				1 KT			37.8	21.12		3.86		1.39	9.41	

Hudson River PCB Analysis Results
(Analysis by Rome Pollution Laboratory)

TABLE 1:

Fish	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1242/1016	PPM as Aroclor 1254	Total PCB's	PPM DDT/DDE	% Oil	Remarks
(Blueback herring (Alosa aestivalis)	4/27/75	9/24/75	1 mile below George Washington Bridge	Hud-R-ME Comp 1					0	5.13	5.13	0.85	13.11	Composite of 2 ets obtained fr anglers
erican shad (Alosa sapidissima)	4/27/75	9/24/75	1 mile above George Washington Bridge	Hud-SH Comp 1					0	1.88	1.88	0.30	19.63	Composite of 5 fillets obtaine from anglers
			1 mile above Kingston-Rhinecliff Bridge	Hud-SH Comp 2					0	1.56	1.56	0.55	3.93	Composite of 3 fillets obtaine from anglers
ueback herring (Alosa aestivalis)	4/27/75	10/1/75	1 mile below George Washington Bridge						0.32	0.52	0.84	0.7	1.64	Rep

MONS 061226

Wallcomac/Mcosic River PCB Analysis Results
(Analysis by Department of Health)

TABLE II

Species	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor 1254	PPM as Aroclor 1260	Total PPM	PPM Duplicate	Remarks
Largemouth Bass (Micropterus salmoides)	9/2/75	9/11/75	Mcosic River above Johnsonville	32-F-2	32-F-2	731171	11.2	0.51	3.8	2.2	6.0		Composite of 2
						4K0753	13.3	1.55					
				32-F-3	32-F-3	731188	14.5	1.69					
						731191	16.2	1.81					
						731182	16.5	3.19	2.5	3.5	6.0		Composite of 3
Yellow perch (Perca flavescens)	9/2/75	9/11/75	Mcosic River above Johnsonville	32-R-1	32-R-1	4K4680	4.1	0.05					
						4K0759	5.7	0.10					
						4K4694	6.5	0.12	2.0	3.4	5.4		Composite of 4
						4K0783	7.6	0.19					
White sucker (Catostomus commersoni)	9/2/75	9/11/75	Mcosic River above Johnsonville	32-F-2	32-F-2	781167	12.3	1.00					
						781194	13.7	0.81	0.7	0.6	1.3		Composite of 3
						No Tag	14.3	0.81					
			Wallcomac River in Wallcomac	32-F-1	32-F-1	731167	10.6	0.39					
						731177	10.9	0.58	2.9	2.9	5.8		Composite of 3
						731193	13.1	0.75					
				32-F-3	32-F-3	731193	15.0	1.20	1.3	0.6	1.9		

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Mohawk River PCB Analysis Results
(Analysis by Department of Agriculture and Markets)

TABLE 19

Fish	Date Collected	Date Analysis Reported	Collection Site	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Grams)	PCB as Aroclor 1254 (PPM)	PCB as Aroclor 1260 (PPM)	Total PCB (PPM)	Remarks
Smooth bass (Morone saxatilis)	9/3/75	9/9/75	Below Schenectady	10933	9R-1	710628	5.2		0.7	1.5	2.2	Composite of 3
						710630	7.8					
						710593	8.6					
Alewife (Alosa pseudoharengus)	9/3/75	9/9/75	Below Schenectady	10937	9F-1	710642	4.8		2.1	1.6	3.7	Composite of 6
						710633	5.0					
						710635	5.1					
						710637	5.1					
						710639	5.1					
						710641	5.2					
White sucker (Catostomus commersoni)	9/3/75	9/9/75	Below Schenectady	10936	9F-2	710646	12.8		0.8	1.9	2.7	Composite of 5
						710643	13.1					
						710644	13.5					
						710647	13.5					
						710648	14.1					
White crappie (Pomoxis annularis)	9/3/75	9/9/75	Below Schenectady	10935	9R-1	710651	6.8		1.6	1.4	3.0	Composite of 5
						710659	7.4					
						710660	7.5					
						710661	7.9					
						710658	8.1					
				10934	9R-2	710653	9.7		0.5	0.8	1.1	Composite of 4
						710654	9.9					
						710652	10.0					
						710651	10.5					
Smooth bass (Morone saxatilis)	9/2/75	9/10/75	Below Schenectady	11050	9P-2	5N587	9.6		0.7	2.1	2.8	Composite of 4
						5N586	9.9					
						5N590	10.6					
						5N588	11.0					
				11051	9P-3	5N591	13.6		1.2	4.7	5.9	Composite of 4
						5N592	13.9					
						5N593	14.4					
						5N595	14.8					

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Mohawk River PCB Analysis Results
(Analysis by Department of Agriculture and Markets)

TABLE II

Fish	Date Collected	Date Analysis Reported	Location	Lab. Identi.	Albany Identi.	Tag No.	Length (Inches)	Weight (Pounds)	PPM in Edible Portion	PPM in Whole Fish	Total Wgt.	PPM Conf. Limit	Remarks
Carp (Confluence Area)	8/29/75	9/8/75	Little Falls	10802	10F-2	4X1038	15.5	1.31	4.9	9.0	13.5		Composite of 5
						4R3067	15.9	1.50					
						4R3-63	16.3	1.56					
						5R245	16.4	1.81					
						4X-58	16.6	1.50					
				10801	10F-3	5R313	17.6	1.81	4.0	9.5	13.5		Composite of 5
						5369	17.3	1.58					
						4R3059	19.3	2.88					
						5R461	22.3	4.25					
						5R237	21.8	4.19					
Smouth bass (Confluence Area)	8/29/75	9/8/75	Little Falls	10800	10R-2	6WC753	10.9	0.69	3.9	9.5	13.4		Composite of 2
						6R0501	12.3	1.69					
e sucker (Confluence Area)	8/29/75	9/8/75	Little Falls	10803	10F-1	6WC378	8.3	0.19	0	4.2	4.2		Composite of 6
						7X1053	8.3	0.23					
						6ST833	8.6	0.25					
						6WR771	8.6	0.25					
						6R0745	8.9	0.25					
						6R0497	9.4	0.31					
				10804	10F-2	6WC726	10.6	0.56	0	1.1	1.1		Composite of 5
						6WR461	10.8	0.56					
						7X1934	11.2	0.50					
						6WC768	11.6	0.69					
						6WR136	11.8	0.62					
n Smallhead (Confluence Area)	8/29/75	9/8/75	Little Falls	10805	10F-3	4R3262	10.9	0.44	2.7	11.3	14.0		Composite of 5
						4X907	11.2	0.44					
						4R3615	12.8	1.19					
						4R3298	12.9	1.00					
						6WR360	13.2	1.31					

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TABLE 21

Rondout Creek PCB Analysis Results
(Analysis by Department of Agriculture and Markets)

[illegible]	Date Collected	Date Analysis Reported	Location	Lab. Ident.	Albany Ident.	Tag No.	Length (Inches)	Weight (Pounds)	PPM as Aroclor [illegible]	PPM as Aroclor [illegible]	Total [illegible]	PPM [illegible]	[illegible]	[illegible]
[illegible]gamouth bass [illegible]icropterus [illegible])	8/18/75	9/5/75	Bloomington	10698	8P-1	2D178	7.0		0	1.2	1.2			Composite of 5
						2D177	7.1							
						2D181	7.1							
						2D183	7.7							
						2D179	8.0							
				10697	8P-3	2D175	16.7		0	1.9	1.9			Composite of 2
						2D174	20.0							
[illegible]ite suckers [illegible]tomus [illegible])	8/18/75	9/5/75	Bloomington	10700	8F-3	2D192	14.8		0	1.6	1.6			Composite of 5
						2D186	14.9							
						2D189	15.0							
						2D191	16.5							
						2D190	18.6							
[illegible]P [illegible]rinus [illegible])	8/18/75	9/5/75	Bloomington	10696	8C-3	2D194	22.7		0	1.5	1.5			Composite of 3
						2D193	24.0							
						2D195	25.9							

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I. Extract oil on soxhlet*

II. Alkaline Hydrolysis

1. Weight ca. 1 g. sample
2. Add 10 ml [illegible] H
3. Add 1 ml KOH 300g/200 ml H_2O
4. Heat in waterbath 5 min. @ 77°C
5. Shake/ stopper/ return to waterbath. Shake 2x more in remainder of 30 min.
6. Allow to cool
7. Add 10 ml H_2O
8. Add 10.00 ml benzene
9. Shake 10 minutes on mechanical shaker
10. Remove AQ. lower layer
11. Add Na_2SO_4 anhyd. to dry benzene fraction

III. Dehydrochlorination

1. Take 5 ml of benzene fraction
2. Add 5 ml benzene
3. Add boiling chip
4. Add .25 ml DBU soln. (5% w/v in benzene) Aldrich 13,900-9 1,5 diazobicyclo (5,4,0) undec-5-ene
5. Place in boiling water bath until benzene is boiled off
6. Rotate tube while cooling to remove traces of benzene

IV. 1. Add 5 ml chromic acid reagent to tube (5 g. CrO_3 + 3 ml H_2O + 60 ml CH_3 COOH.)
2. Stopper and place in water bath 75 - 80°C for 10 min.
3. Cool in cold water
4. Add 20 ml H_2O/swirl to mix
5. Add 15.00 ml hexane
6. Shake 1 minute or 5 minutes on mechanical shaker
7. Withdraw lower AQ layer
8. Add 20 ml H_2O

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9. Shake 20 sec.

10. Withdraw AQ layer

11. Add 20 ml H_2O

12. Shake 20 sec.

13. Withdraw AQ layer completely

14. Add $Na_2 SO_4$ to dry hexane fraction

V. Chromatograph on E.C.G.C.

* Fish samples are ground three times in a Hobart Food Chopper and thoroughly mixed in a Hobart Planetary Mixer. An accurately weighed sample of approximately 50 grams is then lyophilized. This freeze-dried material is then extracted in a Soxhlit Apparatus with hexane.

Reagents and Equipment

(a) Reagents - see PAM I 120-123

(b) Equipment - see PAM I 110-116

(c) Varian Aerograph 1800 Gas Chromatograph - EC detector with tritium source. 6' x 2 mm i.d. glass column with 4.4% SE 30 on 60/80 Gas Chrom Q. Column temp. 183°C, Injector temp. 205°C, Detector temp. 205°C, Carrier gas N_2 30 ml/min.

Sample Preparation

(a) Small fish under 15" - Remove and discard head and viscera; grind with tails - three times thru grinder.

(b) Medium fish above 15" - Remove and discard head and viscera; cut lengthwise along backbone and grind one-half of the fish - three times thru grinder.

(c) Extremely large fish - Cut off caudal section at anal opening, cut lengthwise along backbone and grind one-half of the section - three times thru grinder.

Extraction PAM I 212.13a

Weigh 50 grams of prepared sample into a high speed blendor jar and add 200 ml acetonitrile. Blend at high speed for 2 min. and filter through a funnel containing a loose plug of glass wool into a 250 ml graduated cylinder and record volume (F).

Transfer measured filtrate to a 1 L separatory funnel. Carefully measure 100 ml hexane into the same graduate and pour into the separatory funnel. Shake vigorously 1-2 min. Add 10 ml saturated NaCl soln and about 600 ml H_2O and mix thoroughly for 45 sec. Let layers separate, discard the aqueous layer and gently wash the solvent layer with two 100 ml portions of H_2O. Discard washings, transfer solvent layer to a 100 ml glass stoppered graduate and record volume (P). Calculate the grams (G) of sample to be placed on Florisil column as follows:

$$G = S \times (F/T) \times (P/100) \qquad (1)$$

S = grams of sample extracted

F = volume of acetonitrile extract filtrate

T = total volume (ml H_2O in sample + ml acetonitrile added - correction in ml for volume concentration) Contraction volume of 5 ml is used for 80-95 ml H_2O/200 ml acetonitrile. In this equation the water content of fish may be assumed to be 80%.

P = ml of hexane extract recovered

Column Chromatography PAM I 211.14d

Prepare 22 mm i.d. column with the amount of activated Florisil dictated by recovery studies. Top Florisil with about 1/2" anhydrous Na_2SO_4. Prewet column with 80 ml hexane. Place Kuderna-Danish concentrator with graduated collection vessel under column to receive eluate.

To the 100 ml glass stoppered graduate containing the hexane from the partitioning step, add 15 gm anhydrous Na_2SO_4 and shake. Do not let extract remain with Na_2SO_4. Transfer solution to Florisil column. Rinse graduate 3 times with 5 ml hexane and add to column. When solution has sunk into column, rinse sides of column twice with 5 ml hexane. Elute column at about 5 ml/min with 200 ml 6% ethyl ether/hexane eluant. Remove K-D apparatus and add porcelain boiling chips. Place glass trap on top and concentrate the eluant to 10 ml volume on the steam

with. This is the assay solution.

Gas Chromatography

Inject a 5 ul aliquot of the assay solution into the Gas Chromatograph and compare the retention times of the subsequent peaks with those of a suitable standard whose peak heights are within ± 10% of the injected sample. Quantitate the peaks on the basis of their peak heights.

Calculation

Results should be reported in terms of parts per million PCB's in the product.

Let A = sum of heights of standard's peaks in millimeters
B = sum of heights of assay solutions peaks in millimeters
C = nanograms of standard represented by peak heights A

Then (B/A) x C = nanograms of PCB represented by the peak heights in the assay solution (2)

From equation (1), G = grams of sample placed on florisil column which is also the grams of sample represented by the 10 ml assay solution.

Let Y = ul of assay solution injected
Z = G/10, gms of sample per ml assay solution or mg sample per ul of assay solution.

Then Y x Z = milligrams of sample represented in the amount of assay solution injected (3)

Combining equations (2) and (3) with the definition of PPM:

$$\frac{(B/A) \times C}{Y \times Z} = \text{ppm PCB in the product}$$

John J. Haxstadt
Associate Chemist
9/10/75

NYS FOOD LABORATORY
State Campus - Laboratory Bldg. #7
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Albany, NY 12235

Clean up procedure for tissue in PCB analysis

Soxhlet extraction with

1. Weight 5 g of tissue which have been filleted, ground and composited.
2. Mix well with 15 g of anhydrous Na_2SO_4 in a 50 ml beaker.
3. Transfer to an extraction thimble, (25 X 80 mm, single thickness).
4. Add 80 ml of hexane - acetone (2/1) mixture and some glass beads (about 50) to the bottom flask.
5. Set the flask on the heating mantle with the soxhlet extractor and condenser in place.
6. Turn on the water and the power-stat. (setting at 50). Reflux for 12 hours.
7. At the end of refluxing, let the solution evaporate to 5 ml.
8. Add 25 ml of CrO_3 mixture (prepared by dissolving 9 g of CrO_3 in 6 ml of water and adding 50 ml of glacial acetic acid). Heat at 90-100 C for 45 minutes with stirring.
9. Pour the oxidation product into a 1/2 liter separatory funnel. Add 100 ml of water.
10. Add 25 ml of petroleum ether. Shake vigorously for two minutes and allow for phase separation. After removing the aqueous phase, transfer the ox. phase into a 125 ml flask.
11. Repeat the extraction (step 10) three more times with 15 ml of petroleum ether.
12. Combine the petroleum ether layer in the same separatory funnel, rinse the 125 ml flask 3 X 5 ml petroleum ether. Discard the aqueous phase.
13. Filter the petroleum ether solution through anhydrous Na_2SO_4 to remove any moisture. Collect the filtrate in a Kaduma-Danish evaporator.
14. Evaporate to 2.5 ml.
15. Transfer the extract to a vial for gas chromatography analysis.

16. The vial is loaded into the gas chromatograph sampler carrousel. The column is 2' Apiezon L on Gas-Chrome Q, 6 ft. column, temperature 185 C, flow rate 45 ml per minute. The integrator and computer have been calibrated with a mixture of 1221 plus 1016 plus 1254 (1:1:1) using BBHC as an external standard.

17. The area of the first peak retention time 0.77 minutes is used to estimate 1221. The next 2 peaks (1.80 and 1.55 minutes) are used to estimate 1221 plus 1016. Peaks with retention 2.04, 3.17 and 3.98 are used to quantitate 1016; with peak retention time 6.48 used to estimate 1016 plus 1254; and peaks with retention time 5.97, 7.61, 8.53, 10.95, 11.63, 13.89, 16.01 and 18.40 minutes are used to quantitate 1254. The mean of the estimate given by each peak is used to determine the total quantity of 1016 or 1254.

18. Calibration is effected by computing unique peaks relative to a mass of 5.0 ug/g of fish and whereas combined peaks are calibrated with respect to a mass of 10 ug/g of fish. The unique peaks give a better estimate of the quantity present than the combined peaks which are used only as a check on the analysis.

19. Results are expressed as ug/g wet weight of fish as Aroclor 1016 and as Aroclor 1254. The total PCB present is determined by adding these two estimates.