BIOLOGICAL CONSULTANTS

Water Pollution - Water Quality - Biological Surveys - Fishery Biology

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August 15, 1971

Mr. Eugene Wright
Pollution Control Engineer
Monsanto Company
Technical Services Department
Anniston, Alabama 36201

Dear Mister Wright:

As we stated to you in Anniston some weeks ago, we have worked up the P.C.B. residue data as we have received them from you and intended to report on them formally at the end of the first year of our survey of Choccolocco Creek, the Coosa River and tributaries. However, considering the unfavorable publicity Monsanto Company recently received as a result of the congressional sub-committee report, we felt it imperative that we submit an interim report to Monsanto Company at this time in order to insure that both parties (Monsanto and consultants) may know where we presently stand with regard to the P.C.B. residue analyses.

First, we have spent a great deal of time in deciding what comparisons will be most meaningful to us in looking at the total residue data available. It is our opinion that strict statistical applications are not feasible, or indeed even applicable, because of the tremendous number of variables that come into play with the residue analyses. However, some broad comparisons can be made within the confines of the data and these broad comparisons can be supported by other determinations and interpretations that are indeed justifiable.

Analysis I

We will refer to this analysis as a paired-value analysis for wet weight Aroclor 1254. The comparison of paired values is from one quarter to the next immediate quarter, all fish species combined. Specifically, we are comparing December, 1970 with March, 1971.

CONTROLS--67% of paired values decreased (12 of 18 determinations).
EXPERIMENTALS--50% of paired values decreased (5 of 10 determinations).

Since control stations are those stations wherein the fishes present could not receive P.C.B's due to location with respect to water currents which could potentially carry P.C.B's, then experimental stations are those wherein fishes could receive P.C.B's due to location.

This comparison shows that the fishes in the experimental area do not show a corresponding decrease in P.C.B. residue levels (as Aroclor 1254) compared with the controls. There is a 17% difference.

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We must conclude then for Analysis I that no improvement in fish residue levels, all species combined, is indicated.

Analysis II

The comparison is the same as for Analysis I except that lipid values for Aroclor 1254 were used. Again, all fish species were combined.

CONTROLS--50% of paired values decreased (11 of 22 determinations).
EXPERIMENTALS--30% of paired values decreased (3 of 10 determinations).

In this second analysis we see again that the fishes in the experimental area (subjected to P.C.B. residues) do not show a corresponding decrease in P.C.B. residue levels (as Aroclor 1254, lipid fraction) compared with the controls. There is a 20% difference (compared with 17% for Analysis I).

The first two analyses are indicative of the fact that the handling of the samples and subsequent analysis for P.C.B. residues have been successful and indeed repetitive when the wet weight and lipid fraction values for Aroclor 1254 are compared. This is of course what we would hope for. However, the results are not good since both analyses show us that Aroclor 1254 residues have not decreased as we had hoped they would. Considering the residual nature of P.C.B's we were certainly optimistic to say the least.

Analysis III

We made a single species analysis for each of five fish species: 1. bluegill, 2. blacktail shiner, 3. stoneroller, 4. longear sunfish, and 5. bass. In each instance the residue levels were higher in the experimental area than in the control area. We must wait for further data for the final six months of the first year of the survey to see if this trend is overturned. At this point we would have to say that the data are detrimental to Monsanto.

Analysis IV

A station-to-station comparison was made between successive stations among the 10 stations we had residue data for. Stations 6, 7, 8, and 10 (7 is Martha Williams, 8 is Highway 93, and 10 is Highway 77 for orientation) had the highest residue values for the fishes we studied. This is, of course, logical and to be expected when we consider the location of these stations with respect to the plant. In the future we must be able to demonstrate considerable decreases in residue levels here if we are to show environmental improvement.

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Our field observations over the past few years and continuing up until the present time show that the greatest number of deformed fishes have been found at Marth Williams (Station 7) and stations immediately below 7. We also see the greatest number of fishes that are either sick or listless in these areas. Of course visual observations won't tell us what caused these fishes to become deformed or sick but we must consider the total observations as a crude indication that something is indeed wrong in these areas.

In summary, there is nothing we can do with the residue data at this point that would allow Monsanto to counteract the unfavorable public opinion that may result from the congressional sub-committee report (which we have not seen). Perhaps the June, 1971 data will show a decrease that is not apparent at this point--we can only hope that this will be the case.

Let us point out one additional aspect of the problem that might allow Monsanto Company to derive some favorable publicity. It is our impression that your plant data will show that the plant effluent has been cleaned up tremendously and that on a pound for pound basis you are putting very little residue into Choccolocco Creek at the present time in comparison with past years. Certainly you would not want to give the figures in a news release, but would it not be helpful to state categorically that the effluent is relatively clean at the present time? We fully realize that Monsanto Company officials are in a better position to judge the merits of such a release than we are. It is simply passed along for what it is worth.

We are very sorry that we can't paint a brighter picture at the present time. However, we all know that we have to study these situations carefully and that we must be able to document any claims of environmental improvement before they are released for public consumption.

If you have any questions about this interim report, please let us hear from you.

Very truly yours,

Gerald E. Gunning

Royal D. Suttkus, Ph.D.
Gerald E. Gunning, Ph.D.

gog

esults are ppm.
op number is wet weight.
umber in parenthesis is
pid weight.

	Hypentelium etowanum - Ala. Hog Sucker			Compostoma anomalum - Stoneroller			Notropis venustus - Blacktail Shiner		
	A-1242	A-1254	Total PCB	A-1242	A-1254	Total PCB	A-1242	A-1254	Total PCB
(1) Shoal Creek	0.32 (16.50)	0.02 (1.00)	0.34 (17.50)	0.06 (1.83)	0.04 (1.10)	0.10 (2.93)	0.02 (0.69)	0.11 (4.44)	0.13 (5.13)
(2) Choccolocco Creek, Hwy. 9 Bridge	0.01 (0.58)	0.03 (1.46)	0.04 (2.04)	0.04 (0.96)	0.01 (0.25)	0.05 (1.21)	0.06 (1.30)	0.14 (3.30)	0.20 (4.60)
(3) Choccolocco Creek, Martha H. Williams Bridge, Hwy. 95							3.10 (40.90)	7.76 (102.20)	10.86 (143.10)
(4) Choccolocco Creek, Hwy. 93 Bridge							9.64 (308.33)	11.72 (375.00)	21.36 (683.33)
(5) Choccolocco Creek, Hwy. 77							2.86 (40.00)	2.50 (35.00)	5.36 (75.00)
(6) Cheaha Creek	0.07 (0.85)	0.10 (1.15)	0.17 (2.00)	—	0.04 (0.32)	0.04 (0.32)	0.74 (20.83)	2.18 (61.67)	2.92 (82.50)
(7) Aker's Creek	—	—	None Found				—	0.14 (3.75)	0.14 (3.75)
(8) Cane Creek				0.18 (1.41)	0.25 (1.94)	0.43 (3.35)	0.03 (0.43)	0.11 (2.27)	0.14 (2.70)
(9) Stemley Bridge, Hwy. 34									
(10) Clear Creek									

MUNS 089998

Lepomis megalotis - Longear Sunfish			Lepomis macrochirus - Bluegill			Micropterus - salmoides - punctulatus Bass - coosae			Percina caprodes - Logperch		
-1242	A-1254	Total PCB	A-1242	A-1254	Total PCB	A-1242	A-1254	Total PCB	A-1242	A-1254	Total PCB
0.03 0.90)	0.03 (0.77)	0.06 1.67	—	—	None Found	(Coosae) 0.03 (1.30)	0.02 (0.90)	0.05 (2.20)			
0.03 0.77)	0.07 (2.06)	0.10 (2.83)	—	0.02 (0.75)	0.02 (0.75)				—	0.17 (2.25)	0.17 (2.25
			2.63 (50.00)	8.16 (155.00)	10.79 (205.00)						
			1.44 (95.00)	2.05 (135.00)	3.49 (230.00)						
3.82 86.67)	4.63 (105.00)	8.45 (191.67)	1.94 (55.00)	5.65 (160.00)	7.59 (215.00)						
—	2.20 (63.75)	2.20 (63.75)	3.54 (48.75)	8.00 (110.00)	11.54 (158.75)	(Coosae) —	0.07 (1.83)	0.07 (1.83)			
—	—	None Found	—	0.01 (0.33)	0.01 (0.33)	(Coosae) — (Salmoides) —	— 0.01 (0.29)	None Found 0.01 (0.29)	—	0.33 (2.88)	0.33 (2.88)
—	0.04 (0.75)	0.04 (0.75)	—	0.14 (4.67)	0.14 (4.67)	(Salmoides) —	0.03 (2.00)	0.03 (2.00)	0.09 (1.70)	0.27 (4.90)	0.36 (6.60)
—	0.62 (14.23)	0.62 (14.23)	—	2.50 (54.17)	2.50 (54.17)	(Punctulatus) 0.20 (4.25)	0.50 (10.75)	0.70 (15.00)			
←	0.43 (10.57)	0.43 (10.57)	0.44 (9.00)	0.73 (15.00)	1.17 (24.00)	(Punctulatus) — (Salmoides) 0.31 (7.30)	— 0.66 (15.83)	None Found 0.97 (23.33)			

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