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To/ W.B. Papageorge — FYI

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PCBs — The Evasive Chemical

Analyses indicate polychlorinated biphenyls have been with us a long time, but their level should diminish now that controls have been established.

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During the late summer and early fall of 1971, poultry producers in the southeastern part of the U. S. experienced poor hatchability and high chick mortality. A search for the toxic factor revealed that a shipment of fish meal had been contaminated with polychlorinated biphenyls (PCBs or Aroclors).

As soon as the toxic compound PCB had been definitely identified, ingredient suppliers initiated PCB surveys to determine the status of their products. The results of the 1971 National Renderers Assn., Inc., survey are shown in Table 1.

As the results of the 1971 PCB survey accumulated, it was apparent that renderer products, at least those tested, were low in PCBs. Even though the survey indicated low PCB levels, a number of companies continued to monitor their products even though the first PCB episode was the result of an industrial accident.

In late January, 1972, trouble erupted in Maine. Broiler chicks less than two weeks old were observed dying just a few hours after they had eaten contaminated feed. At this time, concerned companies supplying feed ingredients conducted more analyses for PCB. As of this date the cause of the Maine PCB problem has not been made public.

The results of the National Renderers Assn., Inc., 1972 survey are presented in Tables 2, 3, 4 and 5.

The second survey confirmed the results of the first survey. In fact, PCB levels were slightly lower and only six samples assayed over 1ppm. (1.0), 1.02, 1.10, 1.20, 1.30, and 1.60). Therefore, we can say that renderer products are low in PCB content. As long as the usage of PCB is confined to closed systems such as electrical transformers and its use is not permitted in any food or feed production operations, then livestock and poultry producers should be able to use rendered products without any fear of PCB contamination. The renderers will continue to monitor their products and suggest that all feed ingredients be monitored for PCB.

To add some historical background to the subject of PCBs, the National Renderers Assn. had six samples of rendered products that were of the 1965-66 production. All six of these samples contained less than 0.25 ppm. PCB. The analysis of these six samples is given in Table 6.

The analysis of the NRA samples collected in 1965-66 indicates that PCBs have been with us a long time. I think we can assume that the level of PCB should diminish now that strict use controls have been established for this chemical. The regulatory officials governing the use of polychlorinated biphenyls must be sure that there is no illegal PCB traffic and that this compound, PCB, must be kept out of all products associated with food or feed production. If this is accomplished, it is possible that biological enzymes may slowly remove PCBs from our food chain. #

TABLE 1. PCB Survey—Fall of 1971
(Results are not weighted by product)

Region	Number of Samples	Average PPM	Range PPM
East	14	0.33	0.03-0.99
Southeast	11	0.26	0.03-0.80
South	6	0.09	0.03-0.22
Central	16	0.56	0.14-2.50*
West Coast	8	0.10	0.03-0.21
Northeast	21	0.41	0.025-0.99
Total	75		

*This one sample with 2.50 ppm. PCB was analyzed during the first two weeks of September, 1971, and may reflect an error in analysis rather than the actual content of PCB. But the sample was taken from a supply of ingredients that had been processed through a terminal heater where PCB served as the heat exchange fluid.

TABLE 2. PCBs in Hydrolyzed Feather Meal

Region	Number of Samples	Average PPM	Range PPM
East	3	0.12	0.02-0.09
Southeast	7	0.07	0.00-0.12
South	0	—	—
Central	1	0.00	—
Northeast	6	0.57	0.43-1.10
West Coast	0	—	—
Total	17	0.25	0-1.10

TABLE 3. PCBs in Meat and Bone Meal

Region	Number of Samples	Average PPM	Range PPM
East	1	0.06	—
Southeast	26	0.09	0.05-0.24
South	11	0.09	0.02-0.40
Central	9	0.075	0-0.37
Northeast	0	—	—
West Coast	3	0.03	0.02-0.05
Total	52	0.09	0-0.37

TABLE 4. PCBs in Fats and Greases

Region	Number of Samples	Average PPM	Range PPM
East	3	0.25	0.15-0.40
Southeast	36	0.176	0.05-0.86
South	15	0.22	0.10-0.33
Central	16	0.41	0.12-1.60
Northeast	27	0.34	0.14-1.02
West Coast	3	0.15	0.12-0.20
Total	102	0.26	0.50-1.60

TABLE 5. PCBs in Poultry Byproduct Meal

Region	Number of Samples	Average PPM	Range PPM
East	0	—	—
Southeast	8	0.09	0.05-0.12
South	0	—	—
Central	2	0	—
Northeast	11	0.34	0.15-0.61
West Coast	0	—	—
Total	21	0.21	0-0.61
Grand Total	192		

TABLE 6. PCBs in Rendered Products Produced in 1965-66

Poultry Byproduct Meal	0.06 ppm. estimated PCB
Feather Meal L.*	0.05 ppm. estimated PCB
Poultry Fat	0.25 ppm. estimated PCB
Blood Meal	0.03 ppm. estimated PCB
Feather Meal D.**	0.12 ppm. estimated PCB
Meat & Bone Meal	0.03 ppm. estimated PCB

*L = Light colored
**D = Dark colored

DSW 029403

STLCOPCB4013365