PROGRESS REPORT
ORGANIC CHEMICALS DIVISION
TECHNOLOGY DEPARTMENT

REPORTED BY	FOR	DETAILS	REPORT NO.	DATE
W. M. Mees W. J. Litschgi J. D. Hinchen E. S. Tucker	November-December 1971	NO	4	11-30-71
LOCATION	**JOB NOS**			
St. Louis - South Second Street	2-21-760.01-13480, 85010, 85050			

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PROJECT TITLE

ENVIRONMENTAL ANALYTICAL PROGRAM - TOXICOLOGY SUPPORT STUDIES

PROJECT OBJECTIVE

Determination of the type and level of polychlorinated biphenyls (PCB's) retained in the tissues of laboratory animals fed Aroclor 1242, Aroclor 1254, and Aroclor 1260 for correlation with toxicological effects.

SUMMARY

Analysis of selected tissue samples from the "Two Year Chronic Oral Toxicity Study of Aroclor in Beagle Dogs" has been completed and the data subjected to a multiple regression analysis. The predicting equation obtained indicated that, relative to the two rat studies completed earlier, there was more scatter in these data points. This increased variability is understandable in light of the fact that much lower storage levels were observed and that the tissue samples from the recovery sacrifices were from individual animals rather than the group composite samples analyzed in the rat study.

The analysis of several addition selected samples reduced the equation's variability to an acceptable level and the storage levels in the remaining tissues were calculated. Even with the analysis of the several additional samples, a savings of ~$3700 was realized.

The following conclusions were drawn from the data. The average PCB lipid storage levels found in the tissues for each product after two years exposure are shown in the following table.

PCB Lipid Storage Level (PPM)

Feed Level	1 PPM	10 PPM	100 PPM
Aroclor 1242	3	5	16
Aroclor 1254	6	18	109
Aroclor 1260	13	86	579

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It should be noted that the above storage levels are at least an order of magnitude less than the storage levels observed with the rats.

The storage levels in the animals placed on the recovery diet decreased to approximately one-half the 24 month storage level in 60 days.

Alterations of the homolog distributions were observed with all of the products fed and were much more extensive than previously noted in any of the other tissue residue studies.

Selected tissue samples from the "Toxicity, Reproduction, and Residue Study of Aroclor in White Leghorn Chickens" (IBT J7300) have also been analyzed and the data subjected to multiple regression analysis. Acceptable equations for predicting tissue residues and egg residues were determined, and the tissue storage levels predicted in the remaining samples. The excising, compositing and analysis of the chick samples collected from this study will be completed shortly. A savings of ~$8000 in analytical costs was realized using regression analysis and selected data points.

Samples from the "Toxicity, Reproduction and Residue Study of Aroclor 1242, Lot AK-255 in White Leghorn Chickens" IBT #8746, have been located in Bio-Test's freezer in Chicago. Bio-Test is presently identifying these samples with our matrix numbers and expects to be able to ship these samples to us the week of 12-16-71.

Tissue samples from the "90 Day Subacute Oral Toxicity Studies" with Aroclors 1016, 1221, and 5442 in dogs and with Aroclors 1016, 1221, 5432, and 5442 in rats have been received at South Second Street. Tissues from the 90 day study with Aroclor 5432 in dogs are to be shipped by Bio-Test as soon as possible. Tissues from the remaining 90 day studies with MCS 1109 in both beagle dogs and rats will not be available before 2-15-72.

The tissues in hand from the animals fed PCB's are being analyzed at this time.

The tissues from the animals fed PCT's are awaiting extension of the PCT methodology to biological samples (recovery data). Tissues from all remaining studies will not be available before 1-15-72 at the earliest and in some cases not until 2-15-72.

FUTURE PLANS

Analysis of selected tissue samples for the level and type of PCB residues retained from the following feeding studies carried out by Industrial Bio-Test Laboratories.