Aroclor 1016

Aroclor 1242 and ~~1242B~~ - G.C. Results (RALidgett, Ruabon)

Receipt of the Unilever paper has allowed re-examination of some of the chromatograms obtained earlier since these have also been obtained using similar conditions. Results obtained are given below and data of interest is attached.

Aroclor 1016

Comparison of Aroclor 1242 with ~~1242 B~~ (~~MCI 1016~~)

Tables I and II list the components which may be present in 1242 and ~~1242B~~/1016. Comparison of the figures suggests that if the fractionation is carried out to remove penta chloro and higher compounds only, then distillation could be carried out until the Apiezon L S.C.O.T. or capillary column chromatogram shows removal of peaks from 31 (Unilever chromatogram) onwards, at present. 1242B shows no significant component after peak 21. This may indicate a wider range for the cut point in the distillation but may also possibly mean that a good packed column might be suitable for control. It also shows that peak 31 (using Apiezon L) is responsible for all the penta compounds in the range of peaks 1 - 37 inclusive.

The penta compounds present in peak number 31 have tentative structures :-

24 - 2'4'6', 25 - 2'3'6'

The next observed penta components are in peak 38 and these have the structures :-

24 - 2'3'5', 25 - 2'4'5', 35 - 2'4'6' and

35 - 2'3'6' together with a hexa 26 - 2'3'4'6'

Examination of the Ministry of Agriculture Pigeon Fat Residues

One sample of residue from the fat of a pigeon fed with 1242 (at Tolworth) has been run on the Apiezon L column and this has been compared with a sample of 1242. The following changes have been observed :-

MONS 037523

1) All the dichloro compounds and many of the trichloro compounds have disappeared.

2) The relative concentrations of the high boiling components of 1242 appear little changed.

3) If the pigeon had been fed ~~1242~~ Aroclor 1016 B, on the present evidence there would be little trace of any p.c.b. remaining in the residue.

4) There are indications that the residue chromatogram is showing components which may not be p.c.bs.

5) The peaks in early part of the chromatogram, which do not appear to be removed, probably originate from the following structures :-

Peak	(No. is equivalent to that in the Unilever Chromatogram)	Suggested Structure
18	Major component	3 - 2'3' and/or 4 - 2'4'
21	" "	2 - 2'3'5' and/or 25 - 2'5'
12	Minor component	4 - 2'6'
17	" "	3 - 2'4'
20	" "	2 - 3'4'
8	" "	2 - 4'

Peaks 18, 20 and 21 are present in ~~1242B~~ Aroclor 1016 as minor components only. Peak 12 is of the same retention time as that which shows as a major residual component in Aroclor 1242 subjected to biodegradation.

The results for this residue confirm the suggestion that ~~1242B~~ Aroclor 1016 feeding trials by the M of A (Tolworth) would be very enlightening. More detailed analysis of the chromatograms can be made if required but this will be time consuming and should be discussed.

It must be emphasised that the above interpretations have been made using the retention data from Unilever directly. This means that identifications based upon retention time of known compounds, N.M.R. identifications and retention indices have all been given the same weighting.

Aroclor 1242 B

Peak (= Unilever Chrom)	Component	Cl No.
1	Biphenyl	-
2	2	1
3	2 - 2'	2
4	25	2
5	24	2
6	2 - 3'	2
7	2 - 2'6'	3
8	2 - 4'	2
9	2 - 2'5'	3
10	2 - 2'4'	3
11	2 - 2'3', 3 - 2'6'	3
12	4 - 2'6'	3
13	4 - 4'	2
14	2 - 2'4'6', 25 - 2'6'	4
15	2 - 3'5', 3 - 2'5'	3
16	4 - 2'5'	3
17	3 - 2'4'	3
18	3 - 2'3', 4 - 2'4'	3
19	3 - 2'3', 4 - 2'4'	3
20	2 - 3'4'	3
21	2 - 2'3'5', 25 - 2'5'	4

Where components are given twice retention data is not sufficient to differentiate between the two peak positions.

Components Present in 1242 but removed by distillation from 1242B

Peaks 1 - 21 considered to be present as in 1242

Peak (= Unilever Chrom)	Component	Cl No
22	2 - 2'4'5', 24 - 2'5'	4
23	2 - 2'4'5'	4
24	3 - 2'3'6'	4
25	24 - 2'4', 23 - 2'5', 3 - 2'4'6', 26 - 3'5', 4 - 2'4'6',	4
26	4 - 2'3'6'	4
27	23 - 2'4'	4
28	2 - 2'3'4', 23 - 2'3'	4
29*	? If penta, may be 26 - 2'3'6' or 26 - 2'4'6'	Possible
30	3 - 3'4'	
31	4 - 3'4', 25 - 3'5', 24 - 2'4'6', 25 - 2'3'6'	3, 4
32	23 - 3'5', 4 - 2'4'5'	4
33	23 - 3'5', 4 - 2'4'5'	4
34	25 - 3'4'	4
35	2 - 3'4'5', 3 - 2'3'4'	4
36	4 - 2'3'4'	4
37	23 - 3'4'	4
38	24-2'3'5', 25-2'4'5', 26 - 2'3'4'6', 35-2'3'6', 35-2'4'6'	5 &
39	24 - 2'4'5'	5
40	23 - 2'4'5', 25 - 2'3'4'	5
41	25 - 2'3'4'	5
42*	24 - 2'3'4', 34 - 2'3'6'	5
43	24 - 2'3'5'6', 25 - 2'3'4'6', 235 - 2'4'6'	6
44	24 - 2'3'4'6', 236 - 2'4'5'	6
45	26 - 2'3'4'5', 34 - 3'4', 234 - 2'4'6'	4 &

* Peak 29 structures postulated by RAL