Polychlorinated terphenyls in the environment

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~~4) Dr Wm Richard (2)~~

TO → ~~2) Scott Tucker (1)~~

3) HSBergen

Do we agree with this test method for PCT's?

HSB

This paper describes the detection of polychlorinated terphenyls (PCT) in eggs and fatty tissue of herring gulls (Larus argentatus) from Bay of Fundy, Canada.

Industrial applications of PCT and polychlorinated biphenyls (PCB) are similar. Aroclor series 25 and 44 contain mixtures of PCB and PCT, the series 54 contains only PCT (1).

PCT are not eluted from GLC columns under conditions used for PCB (2). We found that PCT can be determined by GLC on a 6 ft x 4 mm glass column, containing 3% OV-210 (Pierce Chemical Co.) on Chromosorb WAW 60/80, and operated at 200°C. Other conditions were as described (3). Aroclor 5460 gives 8 major peaks (Fig. 1). Detector response based on the total height of the peaks 3.10, 3.96, and 4.83 is 0.122 per ng relative to decachlorobiphenyl.

More than 90% of Aroclor 5460 was eluted in the fraction II of the previously described extraction and cleanup (4). The level of PCT in subcutaneous fat and eggs of herring gulls was 1.4 and 0.1 µg/g, respectively, when expressed as Aroclor 5460 on wet weight basis. PCT were not detectable in eggs and fatty tissue of double-crested cormorants (Phalacrocorax auritus) from the same area.

PCT residues were confirmed by chlorination with $SbCl_5$ in sealed glass tubes for 4 h at 170-180°C, yielding two peaks with retention times of 18.9 and 22.8 relative to decachlorobiphenyl, respectively. Identical peaks were obtained from similarly treated Aroclor 5460. The confirmation of PCT residues by mass spectrometry and the analysis of PCT-spiked and other biological samples is underway.

The presence of PCT in herring gulls and their absence in cormorants may reflect the different feeding habits of these species and may indicate that PCT are not as widely distributed in the environment as PCB, which are present in both species in significant concentrations (5).

HSB: It is plausible based upon the experience we have had to date. It is not proof positive and until GC/mass data is available it will not be. We would have to set up his procedure to say directly yes or no to your question when we perchlorinate 5460 we see three peaks o, m, p not two and with all the pollutants in an actual environmental sample find two peaks which match after perchlorination would not be different.

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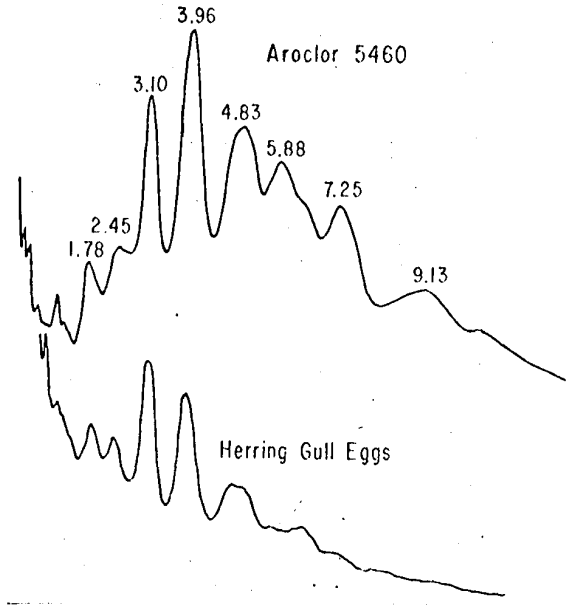

Fig. 1. Gas chromatogram of PCT. Retention times relative to decachlorobiphenyl.

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