

Separation of Aldrin from Aroclor 1254^{1,2}

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Commonly used cleanup procedures do not separate aldrin from the polychlorinated biphenyls (PCB's) (1,2). Gas chromatography was investigated as a means of separation, and two methods were found for separating aldrin from the PCB's.

All analyses were performed on an F & M Model 810 GC equipped with a tritium electron capture (EC) detector. The following 4 mm I.D. glass columns were used: A 2-ft column packed with 2% OV-225 on Anakrom ABS 90/100 mesh, a 6-ft column packed with 2% SE-30/2% QF-1 on Anakrom ABS 70/80 mesh, and a 3-ft column packed with 3% OV-17 on Anakrom ABS 70/80 mesh. The injector, column and detector were held at 220, 180 and 200° C, respectively. Argon-methane (95:5) was used as the carrier gas with a column flow of 60 ml/min. The splitting assembly previously described (3) was used for trapping. A hexane solution containing 5.96 ppm Aroclor 1254 and 0.028 ppm aldrin was used in demonstrating the utility of both methods.

The most direct method of separation is the use of an OV-225 column. On this column, aldrin will precede Aroclor 1254. This is a quick and easy method for quantitation, provided there are no other early eluting peaks. In environmental samples, however, there are quite often peaks eluting before the start of Aroclor 1254. Some of these may be less chlorinated PCB's (e.g. as from Aroclor 1242).

The second method involves the use of an SE-30/QF-1 and an OV-17 GC column and is more applicable to environmental samples. Aldrin corresponds to Aroclor 1254 peak 2 on the SE-30/QF-1 column and to Aroclor 1254 peak 1 on the OV-17 column. Peaks can be

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trapped from either column and reinjected on the other. Figure 1 shows the separation obtained after trapping from an SE-30/QF-1 column and reinjection on an OV-17 column. Quantitative data can be obtained by preparation of a standard curve.

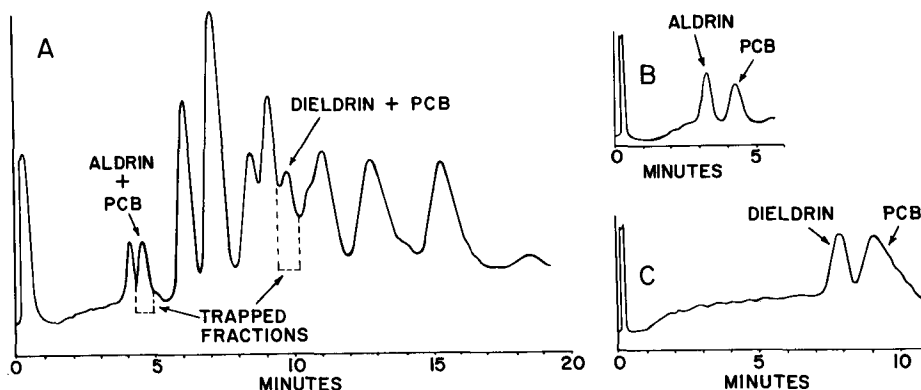


Figure 1. A. Aroclor 1254 plus aldrin and dieldrin on SE-30/QF-1.
 B. Aldrin-containing fraction reinjected on OV-17.
 C. Dieldrin-containing fraction reinjected on OV-17.

This method can also be applied to the separation of dieldrin from PCB's when the peak containing dieldrin is trapped from the SE-30/QF-1 column and reinjected on the OV-17 column. The reverse is not true. Since dieldrin can be separated during the cleanup procedure (2), the application of this method is usually not necessary.

References

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