Rapid Method for Identifying Aldrin in the Presence of Sulfur by Electron Capture Gas Chromatography

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The presence of elemental sulfur in hexane extracts of bottom sediments and water produces a response on electron capture GLC that is similar in retention time to the response of aldrin (4). Similar responses have been obtained from samples of plant and animal origin when chromatographed on the usual non-polar liquid phases (DC-200, SE-30) (3).

Until now, the identification of aldrin in the presence of interfering co-extractives involved either the conversion of aldrin to its epoxide dieldrin (3), or the removal of sulfur by the addition of metallic mercury (2). We have found these methods time consuming in the case of the oxidation method, and ineffective in the case of the addition of mercury. Separation of aldrin from interfering sulfur is readily accomplished by GLC on the polar liquid phase OV-17.

Analysis was carried out on a Hewlett Packard Model 402 High Efficiency Gas Chromatograph equipped with a Nickel 63 electron capture detector. The column used was a 6-foot X $\frac{1}{4}$ inch O.D. glass U-tube packed with 3% OV-17 on Chromosorb W AWDMCS HP. The column was prepared using the solution coating technique (5). The column oven was operated at 180°C and the EC detector at 250°C. The carrier gas flow was 90 ml per minute. Bottom sediments were extracted using standard techniques (1).

As can be seen in Figure 1, aldrin and elemental sulfur are not resolved on the non-polar SE-30 liquid phase. However, good resolution is obtained utilizing the polar OV-17 liquid phase (Figure 2), with sulfur having a retention time of 2.09 relative to aldrin.

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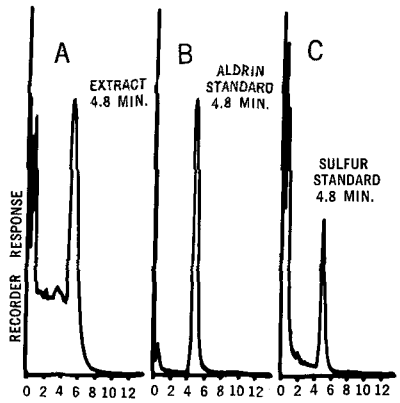

FIG.1—Typical chromatogram obtained using SE-30. A, 50g sediment sample; B, aldrin standard (.01µg); C, sulfur standard (.01µg).

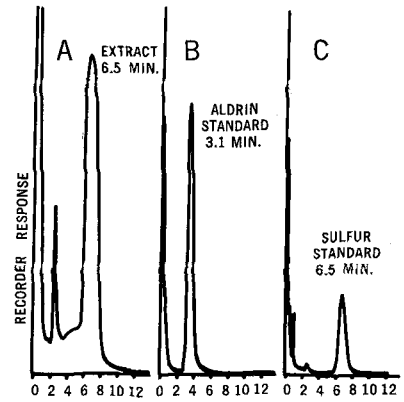

FIG.2—Typical chromatogram obtained using OV-17. A, 50g sediment sample; B, aldrin standard (.01µg); C, sulfur standard (.01µg).

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