

## Pesticide Analysis by GC / ECD / NPD & FID

Since 1963, when Rachel Carson published *Silent Spring* about the destructive power of synthetic chemicals, regulatory agencies in the U.S. have increasingly restricted the manufacture and use of pesticides. The goals of pesticide regulations are to eliminate the use of persistent chemicals like DDT, and to encourage the development of safe, target-specific compounds. Because of the high agricultural demand for pesticides, coupled with regulatory pressure to create short-lived, specialized compounds, a broad array of synthetic chemicals now exists in the environment. As a consequence, the environmental analysis of pesticides involves separations of complex mixtures of compounds by metabolic by-products. The need to quantify them at trace concentrations in difficult matrices, such as soils and surface waters, requires sophisticated gas chromatography.

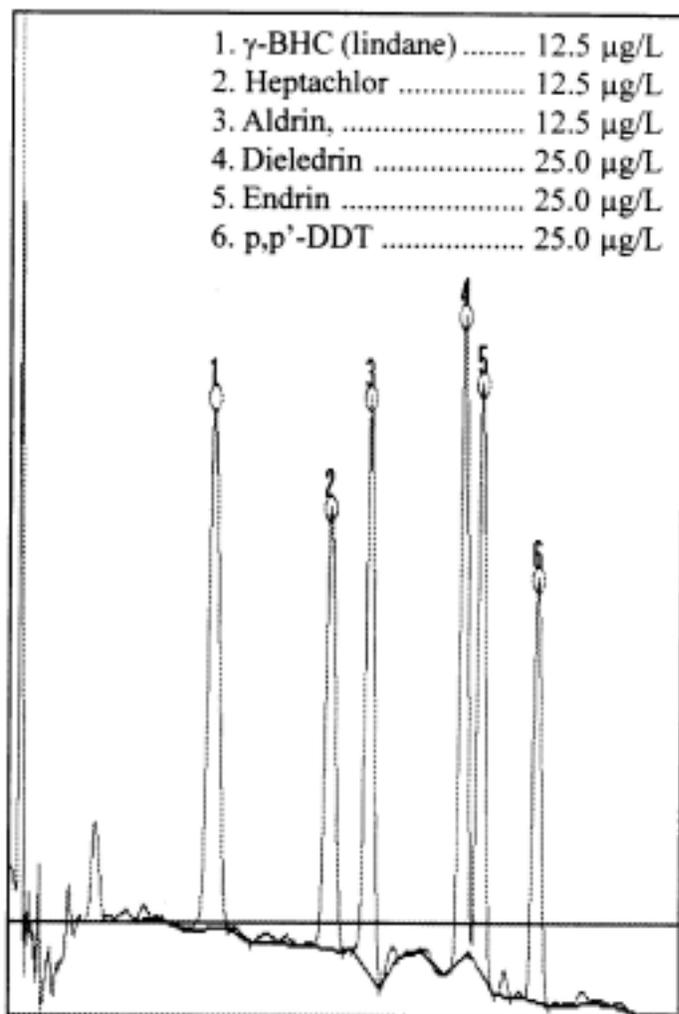
Although GC-MS techniques are popular, they are also expensive. Buck Scientific's cost effective *System P* gas chromatograph is equipped with dual-column, dual detection capability for organochlorine pesticides, and a very sensitive FID and NPD system for accurate quantification and identification of virtually all common pesticides, herbicides, insecticides and PCB's.

Utilizing dual columns of different polarity, the analyst makes positive identifications in a single injection, based on shifts in retention times and elution order. Interferences from overlapping compounds are thus eliminated, and confidence in identifications is comparable to GC-MS.

Simultaneous data can be generated with the NPD for determination of nitrogen and phosphorous containing compounds. The NPD can also be operated in the FID mode for quantification purposes. Since the FID responds to total mass, the detector does not depend on flow rates for accuracy, and quantification of each compound is greatly improved. The model 910, equipped with single ECD and FID, is our most popular system for labs running EPA methods 608, 615, 616, and 8080. The *System P* gas chromatograph is best for broad-based methods such as 507, 508, 617, 622, 1656, and 1657 which utilize ECD and NPD detection.

*Analyst: Kevin Attra*

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### Detector Specifications

#### Electron Capture:

Sensitivity:

20.58mV • sec /pg Lindane

Detection Limit:

0.24 • L<sup>-1</sup> as Lindane

Linear Range:

10<sup>5</sup>

Operating Temp.:

400°C

Applications:

Halogenated Solvents, Pesticides,  
Herbicides, PCB's.

#### Alkalai Bead:

Sensitivity:

0.0026mV • sec / mg • L<sup>-1</sup> as Nitrogen

Detection Limit:

380mg • L<sup>-1</sup> as Nitrogen

Linear Range:

10<sup>4</sup>

Operating Temp.:

250°C

Applications:

Nitrogen and Phosphorous containing  
Pesticides, Herbicides and Insecticides

**BUCK**  

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**Scientific**

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