



# CONCEPT LIFE SCIENCES

## METHOD STATEMENT PAAHS BY GC / MS

### INTRODUCTION

**Note: This method is not UKAS accredited.**

This procedure describes the determination of target phenoxyacetic acid herbicides (PAAHs) in soils and waters by solvent extraction / concentration followed by analysis of extracts by gas chromatography with mass spectrometric detection (GC / MS).

### PRINCIPLE

Target PAAHs are extracted from an aliquot of the test sample with organic solvent, after the addition of a mixture of deuterated PAHs to the test sample. The extracts are then combined and reduced in volume to ca. 0.5 ml. The extracts are then analysed by GC / MS in the selected ion recording mode. This is normally performed at unit mass resolution but if very low levels are required, analysis can be performed at high resolution using a sector mass spectrometer.

### SOIL SAMPLES

0.1 to 10 g aliquots of 'as received' samples are spiked with labelled internal standards then extracted with dichloromethane. Extracts are then derivatised using an appropriate agent. The extracts are reduced in volume to circa 1 ml. The PAAHs are then analysed by GC / MS.

### WATER SAMPLES

10 ml to 1 L aliquots of the shaken sample are taken, acidified and then extracted by liquid / liquid techniques with dichloromethane, after the addition of labelled internal standards. Extracts are then derivatised using an appropriate agent. The extracts are combined then analysed as for the soils.

### PERFORMANCE CHARACTERISTICS

#### SUBSTANCES DETERMINED

This method is suitable for the analysis of the following PAAH's:  
chlorypyralid, dicamba, 2,3,6-trichlorobenzoic acid, mecoprop, MCPA, dichlorprop, 2,4-D, bromoxynil, fenoprop, MCPB, bentazone, ioxynil.

This method is also suitable for the determination of Imazapyr.

#### RANGE OF APPLICATION

- Soils 0.01 to 100 mg / kg (compound dependent)
- Waters 0.1 to 100 ug / L (compound dependent)



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## **LIMIT OF DETECTION**

- Soils 0.01 - 0.1 mg / kg
- Waters 0.1 ug/ L

## **ANALYTICAL QUALITY CONTROL**

Analytical quality control is maintained by a number of measures:

- Multi-point calibration with authentic standards (with defined minimum performance characteristics).
- Analysis of control samples within each analytical batch, such as independent standards, matrix spikes or reference materials.
- Analysis of reagent / method blanks within each analytical batch.

## **REFERENCES**

- US EPA Method 8270, Revision C, Semivolatile Organic Compounds by Gas Chromatography – Mass Spectrometry (GC/MS).
- US EPA Method 3510C, Separatory Funnel Liquid-Liquid Extraction, Revision 3, December 1996.