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High Performance Liquid Chromatography of Pesticides

Tabular Literature Abstracts I

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HIGH PERFORMANCE LIQUID CHROMATOGRAPHY OF PESTICIDES

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FOREWORD

The present tabulated abstracts of literature on high performance liquid chromtography of pesticides are directed to the same community of residue analysts who use the series,'Gas Chromatography of Pesticides' (Gaschromatographie der Pflanzenschutzmittel. Tabellarische Literaturreferate) since 1970.

The increasing use of the HPLC method for analysis of pesticide residues, especially in view of the recommendations of colleagues working in the field, has led us to the elaboration of these abstracts. In the interest of making the literature abstracts accessible to the international community of the respective scientists we have opted for the english language, as is the present general trend of publications in natural sciences.

Similar to the 'Gaschromatography of Pesticides', publications on analysis of pesticides by HPLC methods, which have been described in sufficient details have been utilized for the presentation of tabular abstracts. Included are here original publications of relevant journals appearing in different languages of the world excepting conference reports and other not easily accessible publications. Listing of review articles, monographs, compendia of analytical methods and others will be published in the future issues of HPLC literature abstracts.

However, in comparison to the Gaschromatography Abstracts, the number and the modus of the columns of the tables presented here differ somewhat as a consequence of the differences of the liquid chromatography methods, as also due to differences in computer processing of data input and its representation in tabular form. For the same reasons, a preestablished scheme and uniformity of expression has been applied for the presentation of information under each heading. For details of the procedure, the reader is referred to the 'Instructions for Users'.

The present Part I contains a random collection of the first 300 notations, starting with publications around the year 1973. It is our intention to follow up with further issues of these abstracts of the mentioned literature, till it has been brought up to date. The sequence of later issues would be at varying intervals depending upon the rate of appearance of contributions in scientific journals. In our forthcoming editions, we hope to improve upon whatever mistakes contained in the present version, which represents a first trial in this technical field.

We would like to point out further that basically information as contained in the original publication and without any modification will be reproduced here. However, pesticides and dimensions are invariably represented by their common names and International Standard Units. From amongst general group names etc. used by authors, only those specific pesticides and substrates for which experimental results are presented, are

included in the abstracts. Similarly in the column on sample treatment the compounds used for the commonly applied procedures of extraction, partitioning and clean-up are indicated, with their quantities and concentrations included wherever possible. The apparatus used are given in groups with specifications of manufacturer and models, with a view to account for that part of the technique which often represents an art of the experimentation. Other characteristics of the methods developed, type of study or nature of work are included in the column of remarks as guidelines for further consultation by the users. In this connection we would welcome any requests by users of information or of copies of relevant original publications as also suggestions for the improvement of this Abstracts Service.

Berlin, March 1989.

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LIST OF ABBREVIATIONS OF PERIODICALS

Anal.Chem.	Analytical Chemistry
Anal.Chim.Acta	Analytica chimica Acta
Anal.Letters	Analytical Letters
Analyst	Analyst
Ann.Falsificat.Expert.chim.	Annales des Falsifications et de l'Expertise chimique
Archiv. Environ. Contam.Toxicol.	Archives of Environmental Contamination & Toxicology
BECT	Bulletin of Environmental Contamination & Toxicology.
Beiträge Tabakforschg. Intnl.	Beiträge zur Tabak forschung International
Chemosphere	Chemosphere
Chromatografia	Chromatografia
Internat J.Environ.Anal.Chem.	International Journal of Environmental Analytical Chemistry
J.Agric.Food Chem.	Journal of Agriculture and Food Chemistry
J.Anal.Toxicol.	Journal of Analytical Toxicology
JAOAC	Journal of the Association of Official Analytical Chemists
J.Apicult.Res.	Journal of Apiculture Research
J.Chromatogr.	Journal of Chromatography
J.Chromatogr.Sci.	Journal of Chromatographic Science
J.Econ.Entomol.	Journal of Economic Entomology
J.Environ.Sci.Health	Journal of Environmental Science & Health
J.HRC & CC.	Journal of High Resolution Chromatography & Chromatography Communications

J.Liq.Chromatogr.	Journal of Liquid Chromatography
Landw.Forsch.	Landwirtschaftliche Forschung
Lebensmittelchem.Gerichtl.Chem.	Mitteilungsblatt der GDCh-Fachgrupper Lebensmittelchemie und gerichtliche Chemie
Liq.Chromatogr.HPLC Mag.	Liquid Chromatography & HPLC Magazine
Mikrochim.Acta	Mikrochimica Acta (Wien)
Mitt.Geb.Lebensmittelunters. Hyg.	Mitteilungen aus dem Gebiete der Lebensmittel -untersuchung u. -hygiene (Bern)
Pesticides	Pesticides
Pesticide Sci.	Pesticide Science
Pesticide Biochem. & Physiol.	Pesticide Biochemistry & Physiology
Vom Wasser	Vom Wasser (Jahrbuch GDCh -Fachgruppe Wasserchemie)
Wasser- Abwaser-Forschung	Wasser- und Abwasser-Forschung
Weed Sci.	Weed Science
Z.analyt.Chem.	Fresenius Zeitschrift für analytische Chemie
Z.Lebensm.Unters.Forsch.	Zeitschrift für Lebensmitteluntersuchung und Forschung
Z.Pflanzenkrankh.Pflanzenschutz	Zeitschrift für Pflanzen-krankheit und Pflanzen-schutz

LIST OF GENERAL ABBREVIATIONS

1. The abbreviations used follow the established conventions of International Standards and are represented by the known letters for unit measures, e.g. h= hour, s=second, m=meter etc.
2. Concentrations are expressed in quantities and not in proportions e.g. µg/g instead of ppm.

abs.	absolute
ads.	adsorption
anhy.	anhydrous
analyt.	analytical
&	and
aq.	aqueous
bp	boiling point
[C]	chromatograph system
compd.(s)	compound (s)
concn.	concentration
[D]	detector
detcn.	detection
ECD	electron capture detector
EEC	European Economic Community
electrochem.	electrochemical
Eng	english
equiv.	equivalent
EtAc	ethylacetate
EtOEt	diethylether
EtOH	ethyl alcohl
evpn.	evaporation
evptd.	evaporated
Fr	french
fsd	full scale defelection
FTIR	Fourier transform Infra-red spectrometry
g	gram
GC	gaschromatography
GC-MS	gas chromatography on -line coupled to mass spectrometry

glac.	glacial
GPC	gel permeation chromatography
HAc	acetic acid
HOH	water
HPLC	high performance liquid chromatography
[I]	injection valve
IR	infra red spectrometry
IS	internal standard
Ital	italian
Jap	japanese
kg	kilograms
l	liter
lab	laboratory
LC	liquid chromatography
liq.	liquid
MeCN	acetonitrile
MeOH	methyl alcohol
min.	minute
mg	milligrams
mm	millimeters
MS	mass spectrometry
MS-FAB	mass spectrometry by fast atomic bombardment
µg, µl	micrograms, microliters
NaAc	sodium acetate
NH_4Ac	ammonium acetate
org.	organic
[P]	Pump
PCRS	post column reaction spectrometry
resp.	respective
rp	reverse phase (hplc)
Russ	russian

sepn.	separation
soln.	solution
Span	spanisch
techn.	technical
THF	Tetrahydrofuran
TLC	thin Layer chromatography
TSP	thermospray coupling LC-MS

INSTRUCTIONS FOR THE USER

The tabular abstracts of the original publications on the analysis of pesticide residues by high performance liquid chromatography presents reported data of the parameters specific to this method and to the particular application in each publication, grouped uniformly under the following headings:

1.No. i.e. Number of the publication

The serial number in ascending order assigned to each entry of the publications, which serves to identify the particular abstract for purposes of indices and any other reference.

2.References

The bibliographic data of publications in the following order: The names and initials of all authors, followed by the abbreviated title of the journal, volume, year in brackets, page numbers (beginning and end with the last two digits) of the paper, its original language in big brackets.

Note: The Index of Authors lists the names of all authors of each publuication as they appear under this heading.

3. Pesticides

Pesticides, their respective metabolites or contaminants, however, only those with sufficient analytical data in the original publication, are listed with their ISO nomenclature or, if not assigned, alternatively with the respective national common names or trade names. Any structural configurations are placed after the compound name.

4. Substrates

Each matrix analyzed by the hplc method, also formualtion of pesticides, is listed by its english name, whereby latin denominations of the biological species, if contained in the original, are also included and appear as such in the Index of

substrates. Publications dedicated to method development or procedures analyzing no other substrate than the pesticide (pure or analytical grade) itself are quoted here by the term 'Standards'.

5.Treatment

The main steps of the processing of samples such as extraction, partitioning, clean-up etc. commonly in use in analytical practice are briefly summarized here, indicating the reagents, solvents etc. with their chemical formula or acronym, specifications of columns and any relevant data. Details on these are given wherever the space for the respective entry permits.

6. Apparatus

The instrumentation utilized in the study is grouped under the follwing abbreviated terms giving the respective manufacturer and model:

- [C] Chromatographic system
- [P] Pumps
- [I] Injectors or inlet system
- [D] Detection system together with any relevant specifications contained in the publication.

7. Column & Mobile Phase

First the pre- or guard column, then the analytical column is specified in following order respective to:

- the material of the tubing
- length and internal diameter in millimeters
- particle size, type and designation of the column packing (trade names)
- the components of the mobile phase & within brackets their composition, volume ratio etc., if gradient elution indicating the variations with an arrow (->) and the duration in minutes within brackets
- finally the flow rate in milliliters per minute.

8.Detection limit & recovery

The values of the minimum detectable quantity or range of concentrations of the analyte in the corresponding matrix as reported in the publication are given, followed by percentages of recoveries of the active ingredient in the sample treatment.

9. Remarks

The objective of the study or its nature and type of application together with whatever particularities reported by the authors are presented for the orientation of the user.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
1	Abbott,HA: Pestic.Sci., 17 (1986) 526-34 [Eng].	Carbaryl; Triazophos.	Formulations: powder, wettable.	Isopropanol suspension centrifuged, supernatant for HPLC.	[C] Micrometrics 7000; [D] fixed uv at 245nm; Triazophos & derivatized detection by GC Tracor MT 220.	Stainless steel 300mm Partisil 25 ODS. isopropanol, 0.80ml/min.	Factors for interrelation of laboratory formulation tests and field performance.	Effect of molasses additive on suspensibility, wettability, foaming & field performance of spray mixtures.
2	Abidi,SL: J.Liq.Chromatogr., 10 (1987) 1085-1102 [Eng].	Rotenone; Rotenone metabolites.	Rotenone: natural.	Separation of diastereomers and epimerization to enantiomers. Optical antipodes by preparative column HPLC .	Varian: [C] LC-5020; [D] 110 variable UV-VIS.	250x4.6mm, 5µm Chiralpack OT(CPOT). MeOH, 0.5-6.3 ml/min.	Only separation factors of enantiomers determined.	Study of chiral stationary phases for separation of optical antipodes of Rotenon(D) and its degradation product.
3	Addison,JB: JAOAC., 65 (1982) 1299-301 [Eng].	Chlorphacinone.	Mouse.	MeCN-extract of spiked, freeze-dried sample, hexane wash, concentrate, to Florisil column clean-up with CH_2Cl_2 & MeCN, concentrate MeOH eluate for HPLC.	[C] Varian 5000LC; [D] fixed uv at 254nm.	250x2mm 10µm Lichrosorb NH2. MeCN/HOH (80:20) at 1ml/min.	0-64mg/kg range; >95%.	Polar reverse-phase column avoids column deterioration observed for the octadecyl C18 column with counter-ion reaction.
4	Aharonson,N; Muszkat,L; Klein,M: Phytoparasitica, 13 1985 129-38 [Eng].	Aldicarb; Aldicarb metabolites; Butocarboxime metabolites.	Peach: leaves; Peach: fruits.	Acetone extract, concn., acidify (HCl 0.05M), wash aq. layer with petroleum ether, $CHCl_3$ partition, org. phase on silicagel column clean-up.	[C] Tracor 985; [D] Perkin Elmer 204 Fluorescence Detector	Alltech 250x4.6 mm, 10µm C-8. MeOH/HOH (70:30), 1ml/min.	0.1µg/g (leaves); 0.02µg/g (fruits); 75-91%	Residue formation under field conditions and sampling details.
5	Ahmad,I: J.Environ.Sci.Health, B17 (1982) 253-63 [Eng].	Chloridazon.	Water: pure; Water: river; Standards.	Spiked (2, 10, 50, 250, 500 & 1000 µg/l) water sample through Waters SEP-PAK C18 cartridge at 2.5ml/min., elute with 10ml MeOH abs.	[C] Perkin-Elmer Ser.II; [I] Rheodyne 7150; [D] Perkin-Elmer LC55.	Stainless steel 250x4.6mm, Whatman Partisil PXS 10/24 ODS. MeCN/HOH (25:75 gradient -> 2min. then (30:70) at 3ml/min.	5ng, average recovery: 98% from pure water, 94.6% from river water.	Analytical procedure; extraction of pesticide on precolumn.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
6	Ahmad,I: J.Environ.Sci.Healt h, B18 (1983) 207-19 [Eng].	Difenzoquat.	Water: organic free; Water: ri- ver; Standards.	Enrichment of spi- ked pure water on integrated column: stainless steel 70x4.6mm, Whatman Co:Pell ODS at 2ml/min.	[C] Perkin-Elmer Ser.II; [I] Valco CV-6-UHPa-N60; [D] Perkin-Elmer LC-55 variable uv.	250x4.6mm, What- man Partisil PXS 10/24 ODS. MeCN/HOH (60:40) with 136mg/ml KH_2PO_4.	0.25µg/l, 97% average reco- very.	The enrichment column is integrated to analytical sy- stem; alternate switching of injection valve for rapid water analysis.
7	Ahmad,I: JAOAC., 65 (1982) 1097- 101 [Eng].	Difenzoquat.	Water; Standards.	Spiked water + 1.70 g KH_2PO_4 to C18 Sep-Pak cartridge at 2.5ml/min, mobile phase eluate for HPLC	[C] Perkin-Elmer Ser.II; [I] Rheo- dyne 7120; [D] Perkin-Elmer LC- 55.	Stainless steel: guard, 70x4.6mm, Whatman Co:Pell ODS; analytical: 250x4.6mm., What- man Partisil PXS 10/24 ODS. MeCN/HOH(+6.8045 g/500ml KH_2PO_4) (60:40), 2ml/min.	2-1000µg/kg; >92%.	Chromatographi c parameters for this ap- plication stu- died.
8	Altzemüller,K: J.Chromatogr., 107 (1975) 411-15 [Eng].	DDT o,p'- ; DDT p,p'- ; DDE p,p'-.	Standards.	None	[P] Milton-Roy 196-100; [D] Zeiss PMQ II with variable uv	Glass 300x3.5mm, 10µm Merckosorb SI 60. Light pe- troleum (Merck 1775, bp:40-60°C), 0.6ml/min.	Only separation into two groups without quanti- fication.	Study on ad- sorbent type, solvents & their water content for separation of DDTs from PCBs.
9	Akerblom,M: J.Chromatogr., 319 (1985) 427-31 [Eng].	2,4-D; Dichlorprop; MCPA; Mecoprop.	Air; Standards.	Water wash of air (breath & room); trace enrichment on guard co- lumn:2.2x3.6mm with 0.4g 37-50µm pelli- cular C18 silicagel.	[C] Spectra-Phy- sics 3500B; [I] Valco; [D] Spectra-Physics SP 8200 UV.	Stainless steel 250x3.2 mm, 5µm Spherisorb ODS. 0.1M HAc/MeOH (50:50), 1 - 1.2ml/min.	0.005-0.01 µg/ml; 100%	Modified procedure with trace enrich- ment on guard columnn.
10	Akerblom,M; Alex,G: JAOAC., 67 (1984) 653-55 [Eng].	Bentazone.	Cucumber; Potato; Wheat; Soil.	MeOH extract, resi- due in aq.soln. (wheat residue in pH8 buffer), EtAc (wheat:hexane) clean-up, evpn., residue in pH8 buffer with tetrabutylammonium ion.	[C] Spectra-Phy- sics 3500; [I] Valco 10µl loop; [D] B8200 uv at 254nm with ion- pairing (te- trabutylammonium in pH8 buffer).	Stainless steel 250x3.2mm, Nucleosil 5 C18. 1) MeOH/HAc(0.1M) (50:50 or 55:45); 2) MeCN/HAc(0.1M) (30:70) or 35:65) with ion-pairing reagent, at 0.6- 0.8ml/min.	0.02mg/kg; 77- 103%, soil with high organic content: 63-79%	Selectivity of clean-up sufficient for HPLC.
11	Alawi,MA: Z.anal.Chem., 315 (1983) 358-59 [Eng].	Acephate.	Water; Buffer: soln.	Evpn., take-up in CH_2Cl_2, residue in mobile phase.	[C] pressure 100bar; [D] 215nm.	10µm RP-C8 self packed. HOH/MeOH (25:75), 1.5ml/min.	0.05µg/ml. Reco- very: pH 5 - 84.5%; pH 7 - 94%; pH 9 - 108.4% .	Procedure for determination of Acephate in water & buffer solutions.

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12	Alawi,MA; Ruessel,HA: Z.anal.Chem., 309 (1981) 08-12 [Eng].	Methomyl.	Water: lake; Apple.	Clean-up of acidified water solution (spiked or EtAc-extract of apples) with hexane; residue dissolved in mobile phase.	[P] Knauer 52.00; [I] Rheodyne 71.20; [D] Knauer 87.00 variable uv + Metrohm E611, electrochemical.	Vanadium steel 250x4.6mm, RP-C18. MeCN/HOH, (20:80); 2ml/min.	Water: Methomyl 1ng/ml; with spikes of 0.01-1µg/g mean recovery 93.7%; Apples: 5ng/g, 101.4% (spikes same as water).	Pesticide degradation after field application quantified by electrochemical detector in series with uv.
13	Ali,SL: J.Chromatogr., 156 (1978) 63-70 [Eng].	Lindane; HCH beta-; HCH gamma-	Fat: wool; Fat: pharmaceutical.	Dissolve in n-hexane, MeCN extract, evpn., residue in light petroleum, retain fat on 160x15mm silcagel, toluene eluate concn. to HPLC sepn.	[C] Perkin-Elmer 1220 with fixed uv detector; quantification by GC.	Merck LiChrosorb C18 10µm silicagel. MeOH, 1ml/Min. Accumulated fat removal with hexane and MeOH.	Detection by GLC; 99% .	HPLC used only for isolation of HCH isomers; analysis by GLC.
14	Anderson,JL; Chesney,DJ: Anal.Chem., 52 (1980) 2156-61 [Eng].	Aminocarb; Asulam; Baycarb; Carbaryl; Carbendazim; Chloramben; Chlorpropham; Desmedipham; Dicloran; Phenmedipham; Picloram.	Standards.	1mM stock soln. filtered on 0.22 or 0.45µm Millipore.	[P] Milton-Roy 396-31; [I] Rheodyne 70-10; [D] Kel-F-graphite electrode cell (LC-Electrochemical Cell).	Glass 250x2 mm, Bondapak C18, 37-50µm Corasil. Phosphate buffer/AcCN, (90:10) & (85:15); 0.75ml/min & 0.9ml/min.	40-150pg(2-7ng/g).	Separation better with 5-10µm column packing; detection by Kel-F-graphite electrode (organic solvent resistent) with improved sensitivity.
15	Anderson,JL; Whiten,KK; Brewster,JD; Tse-Yuan On; Nonidez,WK: Anal.Chem., 57 (1985) 1366-73 [Eng].	Aminocarb; Carbendazim; Desmedipham; Dichloran.	Water: river.	Filtration with 0.22µm GS Millipore.	[C] Varian 8500; [P] Altex 110; [I] Rheodyne 7010; [D] Bioanalyt LC-3 & TL-5 + Kelgraf Cell Perkin-Elmer W/LC-15.	Altex-Ultrasil 250x4.6 mm, 10µm C18-Particle. MeOH/buffer (580:420). Buffer: 120ml 2M NaAc + 3 l 0.000676M Na_2HPO_4 + 0.0106M KH_2PO_4 aq.soln.	2.6-22ng/g pesticide spiked in river water; 160%.	Flow response of KEL-F-Grafite electrode in relation to its active site dimensions and fractional active area.
16	Argauer,RJ; Warthen Jr.,JD: Anal.Chem., 47 (1975) 2472-74 [Eng].	Carbaryl contaminants: 2-naphthyl carbamate.	Formulations.	Hydrolyse (250 mg carbaryl equiv.) sample: 50ml 0.25N NaOH, partition with 25ml $CHCl_3$, acidify 10ml 2N HCl, dried $CHCl_3$ layer to HPLC.	[C] Waters ACL-100 with M-6000 pump ; [D] Perkin Elmer MPF-2A fluorescence spectrophotometer	Stainless steel 1219x2.286 mm, 37-50µm Corasil II. Hexane/$CHCl_3$ (4:1).	0.14µg/10µl; recovery not specified.	Contaminant 2-naphthol isomer in precursor 1-naphthol of carbaryl manufacture usable as an indicator.

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17	Arjmand,M; Hamilton,RH; Mumma,RO: JAOAC., 26 (1978) 971-73 [Eng].	2,4-D; 2,4-D metabolites.	Metabolites: conjugates.	Synthetic conjugates separation on 610x7mm µ Bondapak C18 column; elution MeOH/HOH (60:40) at 5ml/min.	Waters: [C] ALC/GPC 244; [P] 6000A; [I] U6K; [D] 440UV with ion-pairing (Waters PIC Reagent A).	300x4mm µBondapak C18. MeOH/HOH 20 -> 50% MeOH (30min), 1.4ml/min.	50ng.	µPorasil column packing & set of other mobile phases not effective.
18	Arjmand,M; Spittler,TD; Mumma,RO: J.Agric.Food Chem., 36 (1988) 492- 94 [Eng].	Dicamba; Dicamba metabolites.	Water: field; Standards.	Precolumn concn.: 100ml Standard soln. adsorbed on 1) NH2 column, 2) Waters SEP PAK cartridges; Elution 2ml : 1) 1N NaCl, 2) 1M K_2HPO_4.	Waters: [C] ALC/GPC 244; [P] 6000A; [I] WISP 710B; [D] Lambda Max 480 for ion-pairing reagent (0.005M Tetrabutylamm.phosphate)	Stainless steel 250x4.6mm, 5µm C18 bonded phase. MeOH/HOH : (50:50) for eluate 1) & (40:60) for eluate 2).	2ng, equiv. to 1.6ng/g. 92.7-93.9% for dicamba.	Precolumn concentration - although elution incomplete - enables multi-residue analysis.
19	Attaway,HH; Camper,ND; Paynter,MJB: Pesticide Biochem. & Physiol. 17 (1982) 96-101 [Eng].	Diuron; Diuron metabolites.	Sediment: pond; Culture media.	EtOAc-extract, evpn., MeOH soln. for Diuron; metabolites: residue in acetone, concn., TLC isolation; both for HPLC.	[C] Tracor 950/970; TLC isolated metabolite with MS & NMR.	Precolumn (not specified); Whatman-Partisil PXS 10/25 ODS-2 rp column. MeOH/HOH (60:40), 2ml/min.	Spiked sediment: 78±10.5%	Anaerobic microbial (by 7 pond sediments) degradation in culture media & MS & NMR structure determination.
20	Austin,DJ; Carter,KJ: Pestic.Sci., 17 (1986) 73-78 [Eng].	Binapacryl; Bupirimate; Diflubenzuron.	Apple: leaves; Apple: peel.	CH_2Cl_2 (+anhy.Na_2SO_4)-extract for HPLC	[P] Pye Unicam LC-XPD with Magnus 7100 Autosampler; [D] Pye Unicam LC-UV variable uv at 254nm.	Guard: 50x5mm Partisil-20; 200x4.6mm SAS-Hypersil-5. Bupirimate & Diflubenzuron: MeOH/HOH (60:40), Binapacryl: MeOH/HOH (70:30), 0.8ml/min.	0.01µg/cm² & 0.01mg/kg; Bupirimate:70.7-74.8%; Diflubenzuron: 44.1-54.1% .	Routine farm broad-spectrum spray(Binapacryl) program compared to integrated pest management program with Bupirimate+Diflubenzuron
21	Austin,DJ; Hall,KJ: Pestic.Sci., 12 (1981) 495-502 [Eng].	Binapacryl; Bupirimate; Diflubenzuron.	Apple: foliage; Apple: fruits.	CH_2Cl_2 extraction of samples of known surface area.	[P] Haskel 28646/4 or Pye-Unicam LC-XPD; [I] Rheodyne 7120; [D] Tracor 970 or Cecil CE 212 fixed uv	50x5 mm, Partisil 202; 200x4.5mm, SAS-Hypersil. MeOH/HOH(60:40), 0.7-0.9ml/min.	1ng Carbendazim with 10% accuracy.	Field persistence of pesticide (orchard trials), and its effectivity.
22	Austin,DJ; Lord,KA; Williams,IH: Pestic.Sci., 7 (1976) 211-22 [Eng].	Benomyl; Benomyl metabolites; Carbendazim; Thiabendazole.	Standards; Potato: seed.	Spontaneous hydrolysis of carbendazim to benomyl by saturation of water.	[C] DuPont 830 and lab. assembled.	Stainless steel 500/1000x2 mm, Permaphase ETH or Permaphase ODS. MeOH/HOH (10:90) or (10:90 weak phosphate buffer).	Retention time only; Thiabendazole 0.2mg/l soln.	Uptake from standard soln. by seed potatoes insufficient for detection.

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23	Bagon,DA; Warwick,CJ: Chromatographia, 16 (1982) 290-93 [Eng].	Eulan WA New; Warfarin; Difenacoum; Pentachlorophenol; Phenylphenol o-.	Air.	Sampling of air on filters, MeOH dissolution of pesticides.	Waters: [P] 6000A; [I] 710B; [D] Cecil CE 2012 uv with HP uv/visible diode array spectrophotometer .	150(Warfarin 250)x4.5mm, Difenacoum: Spherisorb 5 ODS, others: Hypersil ODS. MeOH/HOH: (70-50%) with formate & phosphate buffer.	Warfarin & Pentachlotrophenol: 1µg/m3; others: 1.5µg/m3.	Trace levels of airborne pesticides from factory and agricultural areas collected on filter samplers.
24	Barceló,D: Chromatographia 25 (1988) 295-99 [Eng].	Cyanazine; 2,4-D metabolites; Linuron; Pentachlorophenol; 2,4,5-Trichlorophenol.	Standards.	Ionizing additive 0.1M AcNH4 and 0.2% HAc.	[P] Waters 6000A; [I] Rheodyne 7125; [D] Hewlett-Packard Thermospray LC-MS 5988A quadrupole mass spectrometer.	Tracer Analitica stainlees steel 300x4.0mm, 10µm Spherisorb ODS-2. MeOH/HOH (70:30) and MeCN/HOH (50:50).	30-50ng for Cyanazine & Linuron, 400µg/g for others.	Thermospray interface of LC with MS: TSP-LC-MS (negative ion operation for greater sensitivity).
25	Barry,C; Pike,RK: J.Chromatogr., 195 (1980) 151-53 [Eng].	Barban.	Formulations; Standards.	Methanol solutions of formulations & standards.	[P] Spectra-Physics SP3500B; [D] Waters 440 uv; [I] Waters U6K.	Stainless steel 250x4.6mm, 5µm Zorbax ODS with C18. MeCN/phosphate buffer(13.6g/l KH_2PO_4,pH 4.5) (60:40); 2ml/min.	4µg.	Applicability study optimizing the conditions of the method.
26	Barry,C; Pike,RK: JAOAC., 63 (1980) 647-49 [Eng].	Difenzoquat.	Formulations: powder, solution; Standards.	Dissolution of weighed sample (30mg/50ml) in IS soln.(acetophenone 700mg/l of MeCN/HOH 1:1).	Waters: [P] M6000A; [I] U6K; [D] 440LC dual channel uv + Hewlett-Packard 3354 B/C lab data system.	Stainless steel 250x4.6mm, Whatman Partisil PXS 10/25 ODS. MeCN/pH2.85 buffered HOH (300:700) at 2ml/min. Buffer: 50 wt% NaOH/HOH/phosphoric acid (16.5:683.5:25).	10.2ng.	No interference from other ingredients of formulations observed.
27	Belllardo,F; Nano,GM; Arzone,A; Vidano,C: J.Apicult.Res., 16 (1977) 197-200 [Eng].	Carbaryl; Carbaryl metabolites.	Honeybee.	Extraction with $CHCl_3$; Clean-up with acetone/toluene/hexane (1:1:5) on Florisil;residue dissolved in $CHCl_3$/hexane.	[C] Perkin Elmer 601 LC; [D] LC-55.	Stainless steel 250x2.6 mm, Perkin Elmer 13µm Sil-X-1. $CHCl_3$/hexane (12:88), 1ml/min.	After ingestion: Carbaryl 0.4-2.4µg/bee; 1-naphthol 1.0-0,8 µg/bee. By contact: 7.2µg/bee (1min.) to 33µg/bee (1h).	Study of uptake of Carbaryl by bees after ingestion or contact measured as residue.

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28	Bennett,BR; Grimes,GS: JAOAC. 65 (1982) 927-29 [Eng].	Chlorphacinone; Diphacinone.	Formulations: wax, wheat, grain.	Extract ground bait preparations in HAc glacial, centrifuge for HPLC.	[P] Varian 5000; [I] Valco 10µl loop; [D] Perkin-Elmer LC55B at 288nm.	Whatman Partisil PXS ODS 10/25. HAc glac./tetrahydrofuran/HOH (14:2:9).	Linear response between 0.001 & 0.04mg/ml solns., Chlorphacinone: wheat 97.8%, Diphacinone 96.6%.	Applicable to grain and paraffinized bait formulations at 0.005-0.0025%.
29	Bestman,HD; Devine,MD; Born,WH Vanden: Weed Sci., 35 (1987) 22-26 [Eng].	Chlorsulfuron; Chlorsulfuron metabolites.	Flax; Linum sativum L; Pennycress, field; Thlaspi arvense L; Wheat; Triticum aestivum L.	HOH extract, precipitate proteins with acetone, soln. freeze dry; residue + HOH, extract for HPLC.	Not specified.	Waters SEP-PAK C18 cartridge. Gradient elution MeOH/HOH with 0.1% HCOOH from 0-100% MeOH at 0.5ml/min.	Radioassay of radiolabelled pesticide and metabolites in parts of plant tissue. Absorption 77% of applied; 94% of absorbed.	Extracts of pesticide exposed plant tissue usable for direct hplc separation.
30	Blaicher,G; Pfannhauser,W; Woidich,H: Chromatographia, 13 (1980) 438-46 [Eng].	Aldicarb; Barban; Carbaryl; Chlorbufam; Chlorpropham; Diallate; Mercaptodimethur; Promecarb; Propham; Propoxur; Triallate.	Standards; Tomato.	EtOAc-extract of sample + 30ml HOH, evpn., HOH phase+MeOH, n-pentane wash, partition in $CHCl_3$, clean-up on Florisil.	Waters: [P] M6000A; [I] U 6K; [D] M440 uv.	300x0.625mm Stainless steel, 10µm LiChrosorb Si60. Isooctane/dioxane (97:3) and (76:24).	0.0008 - 0.08 mg/kg, 70-90% .	Applicable for analysis of unidentified pesticide residues in crop.
31	Blaszczyk,M; Boileau,S; Fournier,M; Chevaller,G; Krzystyniak,K: Pesticide Biochem.Physiol., 29 (1987) 233-43 [Eng].	Aminocarb.	Broth: culture.	5% HAc-extract, clean-up on minicloumn: 3ml Supelco LC-18, HOH wash, MeCN eluate to HPLC.	[C] Eyela Tokyo PLC-5.	150x4.6mm, C-18. MeCN/HOH (60:40)	Only percent degradation of spiked quantities given.	Bacterial degradation of pesticide & effect of Aminocarb on bacterial culture.
32	Bowman,MC; Holder,CL; Rushing,LG: J.Agric.Food Chem., 26 (1978) 35-42 [Eng].	Etrimfos; Etrimfos metabolites.	Corn; Alfalfa.	Soxhlet extraction, Sephadex LH-20 clean-up; components separation on silica gel; liquid-liquid partitioning for HPLC.	Waters: [S] 6000A; [I] U6K; [D] 440 variable uv at 254nm.	Stainless steel 300x4mm, Bondapak C18 rp. HOH/MeOH (70:30), 1ml/min., metabolites: (60:40).	50ng/g; 72-78%.	Procedure for preparative work due to low sensitivity for residues .

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33	Brandsteterova,E; Lehotay,J; Liska,O; Garaj,J: J.Chromatogr., 354 (1986) 375-381 [Eng].	Ferbam; Ferbam metabolites; Thiram; Thiram metabolites.	Strawberry; Maize; Tobacco.	Extraction:100g.sample/100cc $CHCl_3$ or MeOH.	[C]: Packard HPLC 8200; [D]: uv.	Glass 150mmx3.2mm, 5µm Separon SIX & Separon NH2. $CHCl_3$/cyclohexane: (45:55), 0.3ml/min., & (20:80), 0.54ml/min. resp. MeCN/MeOH/HOH (40:35:25), 0.42ml/min.	Strawberries: 0.08mg/kg. Maize: 0.012mg/kg. Tobacco: 0.032mg/kg., 89%.	Control analysis of residues and their degradation products feasible.
34	Brandsteterova,E; Lehotay,J; Garaj,J; Leclercq,PA: J.Chromatogr., 404 (1987) 359-64 [Eng].	Ferbam; Ferbam metabolites.	Standards.	Synthesis of Ferbam metabolites: tetrabutylthiuram- mono & -disulphides, tetrabutylthiourea.	[C] Packard 8200; [D] uv & GC-MS Finnigan 4000.	Stainless steel 250x2.2mm, LiChrosorb RP-8. HOH/isopropanol (25:75), 0.21ml/min.	10µg.	Degradation due to uv radiation, time and solvent type studied.
35	Brayan,JG; Haddad,PR; Sharp,GJ; Dilli,S; Desmarchelier,JM: J.Chromatogr., 447 (1988) 2349-55 [Eng].	Carbaryl; Chlorpyrifos-methyl; Etrimfos; Fenitrothion; Methacrifos; Pirimifos-methyl.	Rice; Standards.	MeOH extract, evptd., aq. residue, hexane partition, Florisil cartridge clean-up, acetone/hexane eluate evptd., MeOH soln.for HPLC.	Waters: [P] 510 &501; [I] solvent programmer 660; [D] 481.	Waters: precolumn - Guard-Pak; stainless steel 150x3.9mm, Nova-Pak C18 rp. MeCN/HOH (60:40); Carbaryl & Methacrifos: MeOH extract directly with MeCN/HOH (40 -> 70%, 12min.); 1ml/min.	0.05-1.0 µg/g extract or 3.3-25 mg/kg rice; 85-100%.	Monitoring of stored grain by quantitation directly of extract (simultaneous to Carbaryl) & multiresidue screening with clean-up.
36	Brennecke,R: Pflanzenschutz-Nachrichten Bayer 41 (1988) 113-35 [Ger].	Bitertanol.	Apple; Barley: grain, green, straw; Cherry: brandy, fruit, jam, juice; Sugarbeet: leaves, root; Tea: extract, infusion, leaves; Tomato.	Acetone-extract (barley & tea leaves HOH/acetone 1:2), concn. -> 100-150ml, on column CE 2050 (liquids directly), mobile phase eluate.	[C] Spectra-Physics 8100; [I] 10µl; [D] Shimadzu RF530 fluorescence spectrophotometer 254nm - 322nm.	Steel 125x4mm, Merck 5µm LiChrospher RP18. MeCN/HOH (55:45), 1ml/min.	0.5ng; plant material: 0.02mg/kg, drinks 0.002mg/l. 78-105%.	Selective fluorescence detection avoids clean-up.
37	Briggle,TV; Allen,LM; Duncan,RC; Pfaffenberger,CD: JAOAC., 64 (1981) 1222-26 [Eng].	Cyanuric acid.	Urine; Water: swimming pool.	Purify on rp C18, residue in HOH, soln. on Sigma Dowex-1, residue clean-up in dioxane for HPLC.	Waters: [C] 6000A; [I] U6K; [D] 450 variable uv at 225nm; with Finnigan 4000 GC-MS peak confirmation.	Waters µBondapak C18. MeOH/HOH 0.005M buffer pH7.0 (5:95) at 0.3ml/min.	Urine: 0.05 µg/ml; Water: 0.1µg/ml, 103%.	Absorbance maximum 213nm not used due to interferences.

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38	Brinkman,UATh; Geerdink,RB; De Kok,A: J.Chromatogr., 291 (1984) 195-201 [Eng].	DDE o,p'-; DDT o,p'-; DDT p,p'- ; Heptachlor; Heptachlor metabolites.	Standards.	Extraction of solute from mobile phase into non-polar solvent used for the GC electron-capture detector.	[P] Orlita FE 034 sRC; Micro LC Gilson 302; [I] Valco six-port valve; [D] Pye Unicam 63-Ni ECD.	Stainless steel 750x0.25mm, 8µm CP-Spher-Si/10µm LiChrosorb 10 NH2. Hexane/toluene/MeCN: (50:50:0), MeOH/HOH (85:15).	10-100pg on micro LC.	On-line ECD detectors with MeCN show greater sensitivity.
39	Bromilow,RH; Briggs,GG; Williams,MR; Smelt,JH; Tuinstra,LGMTh; Traag,WA: Pestic.Sci., 17 (1986) 535-47 [Eng].	Aldicarb; Aldicarb metabolites; Methomyl; Oxamyl.	Soil: suspensions; Water: ground	Anaerobic incubation of spiked soil/water mixture, centrifuge; water layer + HAc(glacial), filter and to HPLC.	[C] 1) Gilson 803, 2) Spectra Physics SP 8000A ; [D] 1) Cecil 202 variable- uv at 230nm, 2) Schoeffel SF 770 variable uv.	Guard: 1) Whatman 30µm Co-Pell ODS, 2) 50x4.2mm, 23-57µm CoPell ODS; Aldicarb: 200x4.6mm, 10µm Spherisorb ODS; MeOH/HOH (40:60) & (30:70); others: 250x4.6mm, HOH/MeCN (92.5:7.5).	Degradation due to Fe2+-ions under reducing conditions.	Anaerobic subsoil degradation as affected by pH, redox potential and Fe2+-content studied.
40	Bushway,RJ: J.Liq.Chromatogr., 5 (1982) 49-62 [Eng].	Azinphos-methyl; Azinphos-methyl metabolites.	Water: drinking; Water: stream; Water: ocean; Standards.	Waters C18 Sep-Pak cartridge for trace enrichment, elute with 2ml MeCN.	[P] Waters 6000A; [I] U6K; [D] Schoeffel variable uv.	Waters 300x4mm 10µm µBondapak C18. MeCN/HOH (50:50), 1.3ml/min.	11.3ng/g with direct injection; 0.27ng/g with trace injection. 88-103%	No interference due to retention time differences of residues.
41	Bushway,RJ; Hanks,A: J.Chromatogr., 134 (1977) 210-15 [Eng].	Rotenone.	Formulations: dusts, liquids.	Dioxane soln. (liquid formulations) or extract (dusts) for HPLC.	Waters: [C] 6000A; [I] U6K; [D] 440 uv absorbance at 280nm.	Precolumn: stainless steel 100x3.2mm, 37-50µm Waters C-18 Corasil; 300x4mm Waters µBondapak/C18. MeOH/HOH (80:20), 1ml/min.	2ng, 94.3% .	Rapidity and better resolution by reverse phase column with more stabilty, equilibrium, long life.
42	Bushway,RJ; Perkins,LB; King,JM: JAOAC, 71 (1988) 321-22 [Eng].	Chlorpyrifos; Diazinon.	Formulations; Standards.	67.5mg butylated hydroxytoluene in 25 ml MeCN as IS + standard pesticide soln., mix.	Waters: [P] 6000A & 510; [I] U6K & Valco pneumatic; [D] M490 & M450 variable uv & Hewlett-Packard photodiode array.	Stainless steel 150x4.6mm, 3µm Ultremex C18. MeCN/HOH/THFHAc glac./Mono-Et-Amine (480:230:55:2:0.75), 1.1ml/min.	50ng.	Simultaneous determination of Chlorpyrifos and Diazinon in formulations.
43	Bushway,RJ; Yang,A; Al-Yamany,A: JAOAC., 71 (1988) 323-24 [Eng].	Rotenone.	Cubé: roots; Deris: roots; Formulations; Standards.	Sonic mix with tetrahydrofuran/HOH/MeCN/HAc glac. extraction, filter/$CHCl_3$ extraction, evpn., residue in mobile phase.	Waters: [P] 6000A & 510; [I] U6K & Micrometrics 728; [D] Schoeffel variable uv.	Stainless steel 150x4.6mm: Waters 4µm Novapak C18 & Phenomenex 3µm Ultremex. MeCN/HOH/MeOH (40:40:20) at 1.0ml/min.	95-98% recovery.	Rotenone content of raw material for manufacture.

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44	Buuren,C van; Lawrence,JF; Brinkman,UATh; Honigberg,IL; Frei,RW: Anal.Chem., 52 (1980) 700-04 [Eng].	Atrazine metabolites; Terbuthylazine metabolites.	Urine; Standards.	10ml of undiluted urine concentrated on a precolumn: 2x4mm LiChrosorb RP-18; flowrate 3ml/min.	[P] Perkin-Elmer Ser.2.; [D] Aminco Fluoromonitor/Perkin-Elmer 204A/LC 55 with ion-pairing reagent dimethoxy anthracene sulfonate (DAS).	100x3mm home-packed Lichrosorb RP-2, RP-8, RP-18. 300x4mm Varian Micro Pack CN-10. MeOH/0.1N NaH_2PO_4 -pH 3.5, (25:75), 1.0ml/min.	Lower nanogram range.	Precolumn concentration with fluorescence detection is efficient & rapid.
45	Byast,TH: Analyst, 100 (1975) 326-27 [Eng].	Cyanatryn.	Water: pond; Water: irrigation; Water: channel.	Spike sample, alkalinize (NH_4OH), CH_2Cl_2 extract, residue take-up with MeOH.	[C] Perkin-Elmer 1240.	DuPont Permaphase ETH. MeOH/HOH (12.5:87.5), 0.4ml/min.	0.001µg/g; 88-100% .	Procedure for low level residues of triazine herbicides in water.
46	Byast,TH: J.Chromatogr., 134 (1977) 216-18 [Eng].	Atrazine; Bromacil; Chloridazon; Chlorotoluron; Cyanatryn; Ethofumesate; Hexazinone; Isoproturon; Lenacil; Linuron; Monuron; Methabenzthiazuron; Simazine; Terbacil; Terbutryne.	Soil; Water.	Not indicated.	[C] Perkin Elmer 1240; [D] Cecil 212 variable uv.	Stainless steel 500x1.7mm, PE C18 Sil-X-11. MeOH/HOH (2.5-20: 97.5-80), 0.5 ml/min.	6-57 ng pesticide for 50% fsd.	Summary for a set of herbicide residues in soil and water.
47	Büttler,B; Hörmann,WD: J.Agric.Food Chem., 29 (1981) 257-60 [Eng].	Captafol; Captan; Folpet.	Apple; Grape; Wheat.	Acetone extract, + HOH, partition into hexane, evpn.,silica column clean-up or gel chromatography.	[P] Orlita SK 15-3 reciprocating membrane; [D] Tracor 965 photoconductivity at 254nm.	Stainless steel 250x4.6mm, DuPont Zorbax CN. Isooctane/MeOH/2-propanol, 1.7ml/min.	Fruit: 0.02mg/kg, others: 0.05mg/kg; 75-120% .	Photoconductivity detector enables simultaneous determination of pesticide residues with high sensitivity.
48	Cabras,P; Meloni,M; Manca,MR; Pirisi,FM; Cabitza,F; Cubeddu,M: J.Agric.Food Chem., 36 (1988) 92-95 [Eng].	Carbofuran; Chlozolinate; Parathion-methyl.	Lettuce: type crisp; Lettuce: open shaped.	Extract homogenized leaves with cyclohexane/benzene (50:50:),residue take-up in mobile phase for HPLC.	[C] Spectra-Physics SP 8700; [I] Valco AH20; [D] SP 770 variable uv/vis.	250x4.6mm, 10µm Whatman Partisil-C8. HOH/MeCN (45:55), 1.0 ml/min.	Carbofuran 1ng/g; Chlozolinate 5ng/g; Parathion-methyl 3ng/g. 88.9-103.6% .	Pesticide residue on lettuce as function of application procedure & time studied.
49	Cabras,P; Meloni,M; Pirisi,FM; Cabitza,F: J.Agric.Food Chem., 33 (1985) 86-89 [Eng].	Chlozolinate; Iprodione; Procymidone; Vinclozolin; Benalaxyl; Furalaxyl; Metalaxyl.	Tomato.	Extract homogenate with cyclohexane/benzene (8:2), residue take-up in mobile phase for HPLC.	[C] Varian 5020; [I] Valco AH20; [D] UV-50 variable uv/vis.	250x4.0mm, 10µm Merck Hibar RP-8. HOH/MeCN (50:50), 1.5ml/min.	20-40ng/g; 81.8-106.2% .	Effect of frequency, concentration and time after application on residue formation.

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50	Caccialanza,G; Gandini,C; Roggi,C; Zecca,E: Il Farmaco- Ed.Prat., 36 (1981) 73-77 [Ital].	Zineb metabolites.	Grape; Wine.	MeOH-extract + NH_4Cl, hexane wash, aq.phase clean-up (Al_2O_3-column), NH_4Cl(1%) elute, EtOAc extract.	[C] Varian 5000; [I] Valco continuous flow; [D] Varian Varichrome variable uv at 240nm.	Stainless steel 250x4mm, 10µm Lichrosorb RP-8. MeOH/HOH (10:90), 0.7ml/min.	Wine:0.08 - 0.2mg/kg, grape: 0.03-0.5mg/kg.	Variation of residue due to conditions of field treatment.
51	Camper,ND; Fleming,MM; Skipper,HD: Bull.Environ.Contamin.Toxicol.39 (1987) 571-78 [Eng].	Carbofuran; Carbofuran metabolites.	Soil: loamy sand; Soil: sandy loam.	EtOAc-extract (soils incubated & containing 70% moisture of field capacity), residue take-up in MeOH for HPLC.	[C] Varian 5000; [D] Varian UV-50 with Varian CDS-111 microprocessor.	300x4mm Micropack MCH-10 with pre-column. MeOH/HOH (60:40), 2ml/min.	Not detectable (initial concn. 30µg/g soil); 14-C labelled Carbofuran used for controls.	Pesticide application not effective against target due to proliferation of microbes on biodegraded pesticides.
52	Carter,PL; Overton,KC: JAOAC., 69 (1986) 908-11 [Eng].	Bendiocarb.	Formulations; Standards.	Extract sample with MeCN + 0.1% v/v propiophenone, filter.	Not specified: [P] const. vol. pump; [I] manual or automatic; [D] uv.	316 Stainless steel 250x4.6mm, Whatman Partisil 10 ODS 2 (MeCN-flushed). MeCN/HOH (40:60), 2ml/min.	Statistical variations only.	Collaborative study (13 laboratories) according to preestablished test procedure.
53	Chaput,D: JAOAC., 69 (1986) 985-89 [Eng].	Aldicarb; Aldicarb metabolites.	Water: ground; Standards.	Filter (0.45 µm), He degas, enrichment column: Brownlee cartridge 37x4.6mm, 10µm LiChrosorb RP-8.	[C] Spectra-Physics SP 8100; [P] Milton Roy 46/460; [D] Kratos FS 950 fluorescence with P/N URA-108 fluorophore reaction coil.	250x4 6mm, 10µm Brownlee LiChrosorb RP-8. MeOH/HOH, 18 -> 60% (0-8min.), 60% (8-16min.); 60 -> 18% (16-25min.), 1.5ml/min.	Aldicarb: 0.04 µg/l; metabolites: 0.06µg/l. 75-80%.	Lower detection limits with precolumn enrichment and post column fluorophore derivative.
54	Chaput,D: JAOAC., 71 (1988) 542-46 [Eng].	Aldicarb; Aldicarb metabolites; Carbaryl; Carbofuran; Methiocarb, Methomyl; Oxamyl; Propoxur.	Apple; Broccoli; Cabbage; Cauliflower; Potato.	MeOH extract, wash with CH_2Cl_2, aq.phase concn.,+ cyclohexane/CH_2Cl_2 (1:1), to GPC column, eluted fractions concn., for HPLC.	Spectra-Physics: [C] SP 8700; [I] SP-8780XR Autosampler & injection valve; [D] Varian 2070 spectrofluorometer + Kratos URS-051 reaction system.	Guard: Whatman 50x4.6mm, pellicular ODS; Jones 250x4.6mm, 5µm Apex ODS. MeOH/HOH: 10% (23min.), 90% (27min.), -> 10% (27 -> 37 min.); 1.0ml/min.	5-10µg/kg; 93%	GPC or GPC/on-line Nuchar-Celite clean-up of wide variety crop (also high pigment) enables multiresidue analysis.
55	Chiavari,G; Bergamini,C: J.Chromatogr., 346 (1985) 369-75 [Eng].	Chlorotoluron; Diflubenzuron; Diuron; Fenuron; Fluometuron; Linuron; Metobromuron; Monolinuron; Monuron; Neburon.	Standards; Soil.	10g. spiked soil, + 50ml HOH, pH -> 10.5 (0.1M NaOH), centrifuged supernatant for HPLC.	[C] Hewlett-Packard 1010 with Orlita TW 1515 reciprocating P; [I] Rheodyne; [D] Metrohm 656	250x4.6mm, 10µm Erbasil C18. MeOH/HOH(with 1g $LiClO_4$ &0.05g H_2SO_4 per liter HOH): (30:70).	21mg/kg soil.	Electrochemical detection for environmental samples without clean-up.

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56	Chiba,M; Singh,RP: J.Agric.Food Chem., 34 (1986) 108-12 [Eng].	Benomyl; Carbendazim.	Standards; Water: pond; Water: stream	Treat sample with 5ml 2N NaOH, neutralize with 2N HNO_3, add phosphate buffer & MeCN (each 5m), to HPLC.	[C] Perkin-Elmer Ser.3 & Spectra-Physics SP-8000; [I] Rheodyne & Valco resp. [D] Perkin-Elmer LC-55-S & Spectra-Physics SP 8300.	Precolumn: 50x4.6mm, 25-37µm Whatman Co:Pell ODS; 150x4.6mm Regis HiChrom, 5µm Spherisorb ODS C-18/ODS-II. MeCN/HOH/buffer: (40:45:15) & (23:72:5) at 0.8 - 1.5 ml/min.	0.03-0.05 µg/ml.	Simultaneous assay of residual Benomyl and Carbendazim in aqueous media.
57	Chiba,M; Veres,DF: JAOAC., 63 (1980) 1291-95 [Eng].	Benomyl; Carbendazim.	Apple: leaves; Formulations; Standards.	Extract frozen(-15°C) sample in $CHCl_3$ (1°C), add ion pairing reagent & stabilizer n-butyl isocyanate, soln. for HPLC.	[P] Milton Roy Mini; [I] Rheodyne 70-10; [D] Spectra-Physics SP8200 fixed uv-vis for n-propyl isocyanate ion pairing derivative.	Guard: MPLC 30x4.6mm; Brownlee 250x4.6mm LiChrosorb 10µm Silica. n-hexane/$CHCl_3$ with 1% EtOH (20:80) satd. with HOH.	0.2µg/ml; 78-85%.	Simultaneous analysis of Carbendazim & residues of Benomyl, stable for 75 minutes in $CHCl_3$-soln. at 1°C.
58	Clark,GJ; Goodin,RR; Smiley,JW: Anal.Chem., 57 (1985) 2223-28 [Eng].	Acephate; Alachlor; Atrazine; Carbaryl; Carbofuran; Chlorpyrifos; Diazinon; Fonofos; Fenitrothion; Methomyl; Parathion; Parathion-methyl; Parathion-methyl metabolites.	Endive; Kale; Lettuce; Mustard, greens; Spinach; Turnip: greens; Water: run-off.	Vegetable MeCN extract, +CDTA, org. layer + IS; Water on 100x4.6mm, Porapak Q column, MeCN eluate for HPLC.	[C] Varian 4100; [I] Rheodyne 7105; [D] Varian Vari Chrome variable uv & Metrohm electrochemical cell	Vegetables: Regis Octadecyl 250x4.6mm ; run-off water: Perkin-Elmer ODS 250 x 4.6mm. MeCN/aq. electrolyte soln. (64:36)	Water: 10ng/l; Vegetables: 0.8 - 0.9ng, 95%.	Reductive amperometric detection is selective & without interference from coextractives.
59	Cochrane,WP; Lanouette,M; Greenhalgh,R: JAOAC., 62 (1979) 1222-30 [Eng].	Fenitrothion.	Fenitrothion: technical; Standards.	1g sample in 100ml MeCN for contaminants; 1ml diluted to 100ml for Fentrothion.	Waters: [C] ALC202; [I] U6K; [D] Schoeffel 770 Spectroflow multi uv with tetrabutylammonium ion-pairing.	Guard: Whatman Co:Pell ODS; 250x4.6mm, Brownlee 10µm LiChrosorb RP-8. MeCN/HOH (20:80), at 2ml/min.	3.5% impurity, major one: bis-fenitrothion.	No human hazard from S-methyl Fenitrothion (<0.77%) & Fenitroxon (<0.046%) impurities in pesticide.
60	Cochrane,WP; Lanouette,M: JAOAC., 64 (1981) 724-28 [Eng].	Aldicarb; Aldicarb metabolites.	Potato; Standards.	CH_2Cl_2-extract (+Na_2SO_4), evpn. (2ml), +$CHCl_3$, on Sep-Pak silica gel, $CHCl_3$ eluate + MeCN (1:1) for Aldicarb, +MeOH (1:1) for metabolites.	Waters:[C] ALC202; [I] U6K; [D] Schoeffel 770 Spectroflow multi uv at 220nm for metabolites and 247nm for Aldicarb.	250x4.6mm, Brownlee 10µm LiChrosorb RP-8. MeCN/buffer pH 7.6 (4:96) except Aldicarb (30:70).	Aldicarb: 20ng, 44%; Sulfone: 37.5ng.	Improved sensitivity at 220nm due to clean-up on Sep-Pak & MeCN/HOH elution (metabolites).

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61	Cochrane,WP; Lanouette,M; Trudeau,S: J.Chromatogr., 243 (1982) 307-14[Eng].	Aldicarb; Aldicarb metabolites; Carbofuran; Carbofuran metabolites.	Water: well; Standards.	CH_2Cl_2 extract (+Na_2SO_4), evpn., Sep-Pak cartridge eluates: 1) $CHCl_3$; 2) $CHCl_3$/MeCN (1:1); 3)$CHCl_3$/MeOH (1:1) for HPLC.	[P] Spectra-Physics 740; [I] Rheodyne 7121; [D] Schoeffel 770, at 220nm:Aldicarb metabolites; 247nm: Aldicarb+3-ketocarbofuran; 280nm: others.	Guard column: Whatman 76x2mm, 25-37µm Co-Pell:ODS; Brownlee 250x4.2mm, 10µm RP-18. MeCN/HOH (2:3); MeCN/buffer pH 7.6 (1:9); MeCN/buffer pH7.6 (14:86).	1-5µg/l, 83.6-102% .	Residues < 2µg/l in water from wells in potato growing areas.
62	Cochrane,WP; Lanouette,M: JAOAC., 62 (1979) 100-06 [Eng].	Naphthalene acetic acid.	Apple; Standards.	$CHCl_3$ (+H_2SO_4) extract, filter (Hy-Flo Supercel), +$NaHCO_3$ to pH ≥8, aq.layer + H_2SO_4 pH ≤2, extract into $CHCl_3$, evpn., residue in mobile phase.	Waters: [C] ALC202; [I] U6K; [D] Schoeffel 770 at variable uv 220nm & FS970 LC fluorescence: excitation 220nm, emission 340nm.	250x4.2mm, 10µm LiChrosorb NH2; µBondapak C18. MeCN/aq.buffer (20:80), 1-2ml/min. Buffers: 0.3M Na_2HPO_4; (8g KH_2PO_4 + 2g K_2HPO_4)/L.	0.5ng, 86-98%. Fluorometric detction 0.12ng.	Fluorescence detection gives cleaner chromatograms than with variable uv.
63	Connick,WJ; Bradow,JM: J.Agric.Food Chem., 32 (1984) 200-02 [Eng].	Dichlobenil; Dichlobenil metabolites.	Soil: pine bark; Standards.	1200ml HOH over 100g soil bed, discard first 200 ml, collect leachate, filter Millipore HA 0.45µm for HPLC.	Waters: [P] 6000A; [I] WISP 710B; [D] 450 variable uv.	Guard-PAK C18; 100x8mm, 10µm µBondapak C18 cartridge. MeCN/HOH (50:50) at 2.0ml/min.	0.01 µg/g: 0.01-1µg/g.	Simultaneous metabolite detection in aqueous samples.
64	Connick,WJ; Bradow,JM; Well,W; Steward,KK; Van,TK: J.Agric.Food Chem., 32 (1984) 1199-1205 [Eng].	Dichlobenil.	Formulations; Standards.	Incorporate in Naalginate and carboxymethylcellulose(CMC) gels, granules, for release profile study in static water or in flowing water by bioassay.	Waters: [P] 6000A; [I] WISP 710B; [D] 450 variable uv.	Static: C18, MeCN/HOH (50:50) at 280nm; flow: C18, MeCN/HOH/HAc (50:49:1) at 238nm; soil leachate: radial compression C18, MeCN/HOH (50:50) at 205nm.	Release rates only given.	Active ingredient release profile studied in static & flowing water with bioassay by Hydrilla verticillata (L.f.) Royle.
65	Connick,WJ; Simoneaux,JM: J.Agric.Food Chem., 30 (1982) 258-60 [Eng].	2,4-D; Dichlobenil.	Standards.	Dissolution of: 2,4-D in HOH, Dichlobenil in mobile phase - all filtered (Millipore HA 0.45- or FH 0.5µm), to HPLC.	Waters: [P] 6000A; [I] U6K; [D] 440 fixed uv and 450 variable uv.	Waters 300x3.9mm, 10µm µBondapak C18. 2,4-D: MeCN/HOH/HAc (50:49:1); Dichlobenil: MeCN/HOH (50:50); 1.5ml/min.	1) 0.2µg/ml; 2)0.1µg/ml.	Dichlobenil analysis establishing conditions of anomalous behaviour.

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66	Cotterill,EG: Analyst, 105 (1980) 987-90 [Eng].	Diuron.	Soil.	Soil, dried by air, sieved 3mm, spiked: 1.0, 0.5, 0.01µg/g; 25g soil + 50ml CH3OH; residue in mobile phase.	[P] Bourne End HSCP; [I] Rheodyne; [D] Cecil 212 variable uv at 250nm.	Stainless steel 100x5mm, 5.5µm Hypersil ODS. CH3OH/HOH (7:3), 0.5ml/min.	0.04µg/g; 93-100%.	Reproducibility without cleanup, however GLC more sensitive.
67	Cotterill,EG: Chemosphere, 17 (1988) 1041-47 [Eng].	Chlorotoluron.	Soil; Formulations; Standards.	Extract with MeOH/HOH (4:1), residue in mobile phase for HPLC.	[D] Cecil 212 uv.	100x3mm, Chrompak C18. MeOH/HOH (7:3) at 0.4ml/min.	Degradation rate vs temperature, moisture & adsorption by soil.	Difference in degradation by soils of suspendable concentrate & wettable powder formulations.
68	Cowell,JE; Danhaus,RG; Kunstman,JL; Hackett,AG; Oppenhuizen,ME; Steinmetz,JR: Arch.Environ.Contam.Toxicol., 16 (1987) 327-32 [Eng].	Alachlor formulations.	Urine; Gauze: patches.	Gauze: by GC; Urine: alcaline hydrolysis, CH_2Cl_2 extract + isooctane, evptd -> 3-5ml, + buffer pH 6 to HPLC.	[D] ESA Coulochem 5100A electrochemical.	150x4.6mm, Dupont Zorbax C-8 reverse phase. HOH/MeOH (50:50), 1.0ml/min.	5ng/g.	Pesticide exposure monitoring (biological & passive) of agricultural operators.
69	Daldrup,T; Susanto,F; Michalke,P: Z.anal.Chem., 308 (1981) 413-27 [Ger].	Azinphos-methyl; Bromophos; Bromophos-ethyl; Chlorfenvinphos; Diazinon; Dichlorvos; Dimethoate; Disulfiram; Disulfoton; Ethion; Fenchlorphos; Fenitrothion; Malathion; Mebendazol; Mevinphos; Parathion; Parathion-methyl.	Standards.	Not specified.	Perkin-Elmer: [C] LC Ser.3/2; [I] LC420; [D] LC55 & LC75.	Two columns each 250mmx4mm, 10µm RP18: 1) MeCN & MeCN/HOH (780:1720) (2) MeCN/Buffer (156:344 w/w) gradient elution at 1ml/min.	Only retention times given	Forensic screening application study (simultaneous to TLC &GLC) for fixed operating parameters and column packing set.
70	Davis,PL; Munroe,KE: J.Agric.Food Chem., 25 (1977) 426-28 [Eng].	Biphenyl.	Biphenyl: pad, vapour; Standards.	EtOH-Extract of kraft paper pads (used in citrus packing boxes) & headspace vapours above crystals for HPLC.	Waters [C] ALC-202/401.	300x6.35mm Bondapak C18. EtOH at 2ml/min.	Detection in commercial pads only.	Impregnated pads for citrus fruits shipping cartons analysed.

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71	Davy,GS; Francis,PD: J.Chromatogr., 394 (1987) 323-31 [Eng].	Dichlorprop; Fenoprop; Fluazifop-butyl; Mecoprop.	Standards.	Mobile phase: MeCN with L-prolyl-n-octamide chiral ligand; NiSO4 to water component.	Waters: [P] 6000A; [I] U6-K; [D] 440 absorbance detector.	150x4.6mm, Altex Ultrasphere ODS IP. MeCN(3.2mM metal chelate)/HOH(Ni II,8mM NH_4Ac), (40:60).	Not indicated.	Enantiomer separation in residues of fluazifop in crops.
72	Di Corcia,A; Marchetti,M; Samperi,R: J.Chromatogr., 405 (1987) 357-63 [Eng].	Atrazine; Simazine.	Water: distilled; Water: river; Water: tap; Standards.	Extract sample on 50mg 10-100µm prewashed Supelco Carbopack B, elute with CH_2Cl_2/MeOH (60:40) residue in mobile phase for HPLC.	[C] Perkin-Elmer Ser.1; [I] Rheodyne 7125; [D] Varian 2050 uv.	Supelco Pelliguard; 250x4.6mm, 5µm LC-18-DB rp. MeCN/phosphate buffer(5mmol/l) (31:69), 1.5ml/min.	Atrazine: 0.15ng/l; Simazine: 0.07ng/l (≡2-4ng/l). 95-98.6%	On-site sampling with extraction cartridge for volume reduction.
73	Ding, Xiang Dong; Krull,IS: J.Agric.Food Chem., 32 (1984) 622-28 [Eng].	Abate; Azinphos-ethyl; Azinphos-methyl; EPN; Ethion; Ethoprophos; Famphur; Fensulfothion; Malathion; Methidathion; Parathion; Phorate; Phosalone; Phosmet; Primidophos.	Standards; Wheat: middling.	Crop extracts from US FDA, HPLC column fractions, on-line photolytic derivatization.	[I] Rheodyne 7125; [S] Lab Data Control Constametric II; [D] BAS LC-4B dual electrode oxidative electrochemical detection.	4.6x250mm, with 10µm: Biophase C-18 & Waters µBondapak C-18. 4.6x100mm, 3µm Perkin Elmer Fast LC C-18. MeOH/0.2M NaCl (70:30), 1.2ml/min.	0.16 to 1.4µg/g.	Electrochemical detection after on-line photolytic derivatization of crop extracts.
74	DiPrima,SJ; Cannizzaro,RD; Roger,JC; Ferrell,CD: J.Agric.Food Chem., 26 (1978) 968-71 [Eng].	Diflubenzuron.	Crustacean; Egg; Fat: chicken, cow; Fish; Foliage; Grass; Kidney: chicken, cow; Liver: chicken, cow; Milk; Muscle: chicken; Sediment; Soil; Water.	Extraction: crop, animal tissue & soil with MeCN; Milk (EtOAc); Water (hexane; filter, column clean-up, elute ,residue in mobile phase.	Waters: [C] ALC/GPC 204; [P] M6000-A; [I] U6K; [D] 440 uv.	300x4mm, Waters µ-Bondapak (10µ-Porasil ODS). MeCN/HOH (60:40) & MeOH/HOH (75:25), 1.0-1.5ml/min.	Water: 0.01µg/ml; others: 0.05µg/g, 70-125%.	Routine analysis procedure for residues in agricultural and non-agricultural samples.
75	Dolphin,RJ; Willmott,FW; Mills,AD; Hoogeven,LPJ: J.Chromatogr., 122 (1976) 259-68 [Eng].	HCB; HCH alpha-; HCH beta-; HCH gamma-; DDT p,p'-; DDE p,p'-; Dieldrin; Heptachlor metabolites.	Milk.	Milk + H_2SO_4 dil., extract with n-hexane.	[C] Automatic Milk Pesticide Monitor (abbreviated AMPM): [P] Pye-Unicam 20LC	Precolumn: 500x2.1mm, 5µm Partisil; stainless steel 150x3.1mm, 10µm Partisil. n-hexane, 1ml/min.	≈1 ng pesticide, equiv. to 0.2mg/kg milk fat.	Symposium (Chromatography, Birmingham 1976) presentation of an automatized monitor system.

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76	Draper,WM; Lucero,C; Street,JC: J.Agric.Food Chem., 30 (1982) 1002-04 [Eng].	Carbofuran; Carbofuran metabolites.	Hop: green; Hop: dried.	Reflux with 0.25N HCl, extract in CH_2Cl_2 & CH_2Cl_2/EtOEt, ethoxylate org. phase, residue in MeCN.	[C] Varian 5021. [D] uv at 254nm; GC analysis (Tracor MT 220).	250mm, 10µm Varian rp ODS. MeCN/0.02M phosphate buffer pH 2.2 (1:4) for HPLC fractions.	0.3mg/kg; 75-86% by GC.	Polyphenols (tannin) coextractives clean-up by HPLC fractionation; GC-ECD detection.
77	Drossel,C; Herrera Perez,G: Lebensmittelchem.Gerichtl.Chem., 41 (1987) 6-7 [Ger].	Dioxacarb; Methfuroxam; Monalide; Pentanochlor.	Cucumber; Standards.	Standard method (S 19, Mitteilung VI der Arbeitsgruppe Analytik, 1. bis 8. Lieferung 1985) of German Research Society (DFG).	[P] Knauer 64; [D] 254nm uv.	1) 150x1mm, 3µm Spherisorb ODS II; 2) 250 x 4.6mm, 5µm Spherisorb. MeOH/HOH (7:3) or MeCN/HOH (1:1), column: 1) 20µl/min., 2) 1.0µl/min.	0.1mg/kg.	Applicability study of standard procedures.
78	Eder,G; Sturm,R; Ernst,W: Chemosphere, 16 (1987) 2487-96 [Eng].	DDT; HCH; HCB; Lindane; TDE.	Sediment: river.	Sediment + Na_2SO_4 anhy., extract in n-hexane/acetone (2:1), concn.,+EtOAc to HPLC.	Waters: [C] 6000A; [I] U6K; [D] 440 absorbance at 254nm for fraction separation only; detection by GC.	300x3.9mm, µ-Porasil. n-Hexane/EtOAc (97:3) 5min. -> (94:6), 1ml/min., collect 30 fractions of 1ml each.	HPLC used for fractionation from PCBs.	Sediment analysis (3 interlaboratory procedures) using GC for detection.
79	Engelhardt,H; Lillig,B: Chromatographia, 21 (1986) 136-42 [Eng].	Carbofuran; Propoxur.	Hop; Kohlrabi; Savoy Cabbage; Standards.	Extraction with CH_2Cl_2; residue in MeOH/HOH (1:1).	[C] Waters M6000; [I] Rheodyne 7125; [D] Kontron SFM 23 & Kratos, Schoeffel FS970 on-line fluorophore derivatization.	100-150mm, 3µm Spherisorb RP C18 and 5µm Lichrosorb Si 100. MeOH/HOH (55:45), 0.75ml/min.	20ng/g.	Post-column reaction for fluorophore; kinetic study for optimization of the procedure.
80	Ernst,GF; Verveld-Röder,SY: J.Chromatogr., 174 (1979) 269-71 [Eng].	Ethoxyquin.	Standards; Apple.	n-Hexane extract, dry, alumina clean-up, EtOEt/MeCN (95:5) eluate, evpn., MeOH soln. (filtered) for HPLC.	[C] Hewlett-Packard 1084A; [D] Schoeffel FS 970 LC fluorimeter (variable nm).	Stainless steel 250x4.6mm, 10µm Spherisorb 10 ODSM. HOH/MeOH (20:80), 2.5ml/min.	0.05-0.25mg/kg; 98% .	Clean-up of apple samples (some varieties) for fluorescence detection.
81	Farran,A; De Pablo,J: Internat.J.Environ.Anal. Chem., 30 (1987) 59-68 [Eng].	Azinphos-methyl; Diazinon; Fenthion.	Standards.	Standard solutions of pesticides, circulate over active carbon column,to HPLC.	[P] Spectra-Physics SP 8700; [I] Rheodyne; [D] SP-8440 uv-vis.	Knauer Nucleosil-C18, 120x4mm. MeCN/HOH (60:40), 1ml/min.	0.5mg/l.	Effluent monitoring in a flow injection system of desorptive removal by active C column.

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82	Farrington,DS; George,DA; Woollam,CJ; Bratton,GJ: Analyst, 106 (1981)713-17 [Eng].	Bromoxynil; Ioxynil.	Formulations: octanoates.	MeOH soln.	[C] Waters 6000A; [I] Rheodyne 7120; [D] Cecil CE212 variable uv at 286nm.	Stainless steel 150x4.6mm, 5µm Spherisorb ODS. MeOH/HOH (1:1) + 12.6g/l ion-pairing reagent, 2ml/min.	0.01mg/g.	Optimum resolution without derivatization of co-extractives & metabolites (GLC & Titrimetry give higher values).
83	Farrington,DS; Hopkins,RG: Analyst, 104 (1979) 111-16 [Eng].	Ethylenebisdithiocarbamate metabolites.	Formulations.	MeOH soln.	[C] Waters 6000; [I] Varian stop-flow; [D]Cecil CE212 variable uv at 240nm.	Stainless steel 180x4.6mm, 5µm Spherisorb CN. EtOH/hexane (35:65), 0.8ml/min.	Not specified.	Precursor degradation during analysis (GLC) avoided by MeOH extraction.
84	Farrington,DS; Hopkins,RG; Ruzicka,JHA: Analyst, 102 (1977) 377-81 [Eng].	Chlorbromuron; Chloroxuron; Chlorotoluron; Diuron; Linuron; Metobromuron; Monolinuron; Monuron.	Soil; Water; Wheat: grain.	MeOH-extract, residue in CH_2Cl_2, over Na_2SO_4, evpn. take-up in MeOH for HPLC; water: CH_2Cl_2 extract directly, as above.	[C] Waters 6000; [I] Varian stop flow; [D] Cecil CE212 at 240nm.	Lab packed stainless steel 300x4.6mm, 5µm Spherisorb ODS.MeOH/HOH (60:40) with 0.6% NH_4OH.	Soil: 0.2mg/kg, river water: 0.01mg/kg, recovery 98-100%; wheat: 0.2mg/kg, recovery 84-94% .	Ammonia in mobile phase resolves coextracted interferences.
85	Farrington,DS; Martindale,RW; Woollam,CJ: Analyst, 107 (1982) 71-75 [Eng].	Dinobuton; Dinoseb; Dinoterb; DNOC.	Formulations: oil based; Standards.	Solns., add IS-soln.: acetophenone (DNOC), butyrophenone (Dinobuton, Dinoseb), propiophenone (Dinoterb).	[S] Waters 6000A; [D] Variable uv monitor Cecil Instr. CE 212; [I] Rheodyne 7120.	Stainless steel 150x4.6mm, 5µm Spherisorb ODS. MeOH/HOH with 2g/l N(CH3)4.Br: (70:30) for Dinoseb, Dinobuton, Dinoseb in Dinobuton; (50:50) for Dinoterb; (30:70) for DNOC, all 1-2ml/min.	1mg/ml.	Dinitrophenol pesticides analysis comparative to spectrophotometric & GLC data.
86	Farrow,JE; Hoodless,RA; Sargent,M; Sidwell,JA: Analyst, 102 (1977) 752-58 [Eng].	Biphenyl; Carbendazim; Phenylphenol o-; Thiabendazole.	Grapefruit: peel; Lemon: peel; Orange: peel; Standards.	2N HCl-reflux, $CHCl_3$-extracts in acid & base soln., biphenyl & 2-phenylphenol: steam distilled.	[C] Waters 6000 or 6000A; [D] Cecil CE212 variable uv at 288nm & 254nm.	Stainless steel 150x4.6mm, LiChrosorb Si-60 (Carbendazim, Thiabendazole); $CHCl_3$.	57-102%.	Simple extraction & clean-up procedure for pesticide residues in citrus fruits.
87	Fedeli,G; Moltrasio,D; Aleotti,M; Gazzani,G: J. Chromatogr., 447 (1988) 263-67 [Eng].	Captan.	Formulations; Standards.	Filtration with Millipore XX 10.047, 0.45µm membrane HAWP 047 00.	Perkin-Elmer: [P] Ser.3B; [D] LC85 spectrophotometric detector with LC Autocontrol; [I] Rheodyne 7125.	Stainless steel 250x4mm Perkin-Elmer 10µm C8 silica rp. MeOH/HOH (90:10), 1.0ml/min	500µg/ml.	Simultaneous determination of Captan in presence of sulfur in formulations.

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88	Fogy,I; Schmid,ER; Huber,JFK: Z.Lebensm.Unters.Forsch., 169 (1979) 438-43 [Ger].	Aminocarb; Barban; Benomyl; Bufencarb; Carbaryl; Phenmedipham; Propoxur.	Apple; Cabbage; Cauliflower; Grape; Lettuce; Plum; Potato.	Spike (MAC quantities), CH_2Cl_2 extract, residue dissolved in mobile phase.	[C] Siemens S 100; [D] Perkin Elmer LC 55.	Steel tubes 250x3mm, two in series, 10µm LiChrosorb Si 100. 2,2,4-trimethylpentane/dioxane (9:1), 1.25ml/min & 1ml/min.	In order of pesticides: 0.25, 0.10, 0.20, 0.20, 0.025, 0.05, 0.10µg/mg.; 56-100% .	Applicabilty study for rapid analysis (70min as compared to former 2-4 hours).
89	Fogy,I; Schmid,ER; Huber,JFK: Z.Lebensm.Unters.Forsch., 170 (1980) 194-99 [Ger].	Aminocarb; Barban; Benomyl; Bufencarb; Carbaryl; Phenmedipham; Propoxur.	Beet; Blueberry; Carrot; Kale; Lemon; Lettuce; Peach; Spinach; Tomato.	Spiked sample, CH_2Cl_2 extract, clear residue dissolved in 10ml mobile phase.	[C] Siemens S 100; [D] Perkin Elmer LC-55.	3 Steel tubes 250x3mm: 1 & 2 in series, 3 in parallel: 5µm Nucleosil-Nitril, 10µm LiChrosorb-Diol, 100µm LiChrosorb Si. 2,2,4,-trimethylpentane/dioxane (9:1), 1.15 & 1.00ml/min.	0.05 to 0.5µg/mg; 55-89% .	Fractionating enrichment by column circuit gives high separation capacity without precleaning.
90	Fogy,I; Schmid,ER; Huber,JFK: Z.Lebensm.Unters.Forsch., 173 (1981) 268-74 [Ger].	Barban; Bufencarb; Carbaryl; Phenmedipham; Propoxur.	Apple; Beet; Kale; Lettuce; Standards.	CH_2Cl_2 extract of triturized sample, evpn., soln. in mobile phase.	[C] Siemens 100; [D] Perkin-Elmer LC-55 variable uv, 239nm: Barban, Phenmedipham; 273nm: Propoxur. 282nm: Carbaryl; 285nm: Bufencarb.	3 steel tubes à 250x3mm: Step 1: 10µm Lichrosorb-Nitril over Step2: 10µm LiChrosorb-Diol at 1.15ml/min & 10µm LiChrosorb-Si100 parallel to last 1ml/min.; with 2,2,4-trimethylpentane/dioxane (9:1).	0.01-0.1 µg/g, 67-100%.	Interference eliminated by first column, also usable for direct quantitation.
91	Forbes,S: Anal.Chim.Acta, 196 (1987) 75-83 [Eng].	Flamprop-isopropyl.	Wheat: straw; Standards.	Acetone/hexane (1:4)-extract, residue in (1:9) mixture, HOH/MeCN (3:7) partition, extract in hexane, residue in EtOEt/hexane (1:1) on Sep-Pak.	HPLC for automated semi-preparative use (with Varian AASP sample transfer module); analysis by GC.	Elute Sep-Pak with mobile phase to column: 200x10nmm, LiChrosorb-NH2. Propan-2-ol/hexane (1:99), 4ml/min.	GC analysis used.	Interference from complex matrices eliminated by automation with sample transfer module & column switching.
92	Ganzler,K; Salgo,A; Valko,K: J.Chromatogr., 371 (1986) 299-306 [Eng].	Bromophos; Parathion.	Soil.	MeOH-extract by: (1) Shake flask, (2) Micro-wave irradiation ; both samples centrifuged.	[P] Labor MIM 312; [I] Rheodyne 7010 variable uv.	Chromatronix 250x4.6 mm, 10µm Dimesil C18. 50mM phosphate buffer/pH2 MeOH (85:15), 1ml/min.	Parathion: 0.05-0.25mg/g; Bromophos: 0.5-2.5mg/g; 100%.	Extraction by microwave rapid & more effective than shake-flask method.

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93	Gillespie,AM; Walters,SM: J.Liq.Chromatogr., 9 (1986) 2111-41 [Eng].	Chlorpyrifos; DDE p,p'-; DDT p,p'-; Heptachlor metabolites; Lindane; Methoxychlor.	Butter: whole; Standards.	Melt butter, decant, n-hexane soln.(0.4g/ml), spike for HPLC.	[C] Spectra Physics SP 8700; [I] Waters U6K; [D] Waters 440 only for fractionation; GC & GC-MS analysis.	DuPont 250mm: x6.2mm, 6µm ZORBAX PSM 60-S; x4.6mm, 6µm ZORBAX SIL (ads. chromatography); ZORBAX SIL semi-preparative columns. CH_2Cl_2/hexane (40:60), 1.6ml/min.	Mean recovery 91.8- 102.9%	Pesticide fractionation procedure for edible fats & oils.
94	Goewie,CE; Hogendoorn,EA: J.Chromatogr., 404 (1987) 352-58 [Eng].	Carbaryl; Carbofuran; Propoxur.	Diet: complete.	CH_2Cl_2 extraction, residue in MeCN/light petroleum (2:5); soln. in MeCN+HOH, pre-column concentration (automated).	[P] Waters M45 & 9208; [D] post-column reactor with Perkin-Elmer LS4 fluorescence.	150x4.6mm, 5µm Hypersil ODS. MeCN/HOH (35:65), 1.5ml/min.	0.3ppb; 70-89%	Automated pre-column clean-up circuit detailed.
95	Goewie,CE; Hogendoorn,EA: J. Chromatogr., 410 (1987) 211-16 [Eng].	Bromacil; Diuron; Diuron metabolites.	Water: well; Standards.	CH_2Cl_2 extract, dry, evpn., take-up in MeOH/HOH (10:90), precolumn clean-up, in mobile phase.	[P] Emmen Kipp 9208; Philips PU 4015; [I] PROMIS autosampler with Rheodyne 7163 & 5300; [D] Waters 441 fixed uv.	Brownlee NewGuard 150x3.2mm, 7-µm RP18; stainless steel 150x4.6mm, 5µm Hypersil ODS. MeOH/HOH (10:90) at 1ml/min.	Bromacil: 0.2µg/l, 94%; Diuron: 0.01µg/l 100% .	Extraction indispensable before direct adsorption on precolumn.
96	Golab,T; Althaus,WA; Wooten,HL: J.Agric.Food Chem., 27 (1979) 163-79 [Eng].	Trifluralin (^{14}C labelled).	Soil: agricultural.	Soil extract in MeOH & 50% aq.MeOH, concn., partitioned $CHCl_3$ or EtAc; extract for HPLC separation & MS analysis.	Not specified.	620x2.12mm, Bio-Sil (dimers). 0.05, 0.5, 1.0, 2.0% isopropanol/heptane at 1ml/min. 300x4mm, 10µm Spherisorb (acidic phenols). 20 & 25% isopropanol in heptane.	HPLC used for separation and purification prior to MS analysis.	Trifluralin residue degradation in field soil (3 year period) with TLC, GLC, GC-MS & MS.
97	Goldberg,AP: LC, Liq. Chromatogr. HPLC Mag., 1 (1983) 358-61 [Eng].	Chlorpropham; 2,4-D; 2,4-DB; 2,4-D-methylester; 2,4-DB-methylester; Fenoprop; Fenoprop-methylester; Propachlor; 2,4,5-T; 2,4,5-T-methylester.	Standards.	None.	[C] Du Pont Sentinel System with pump, gradient controller, column compartment & spectrtophotometric detector.	80x6.2mm, 3µm Golden Series Zorbax C8. HOH/HAc/MeCN/MeOH/THF (53:31:9:7), 1.7ml/min.	90µg.	Analysis time shorter with wide-bore column.

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98	Grayson,BT; Williams,KS; Freehauf,PA; Rease,RR; Ziesel,WT; Sereno,RL; Reinsfelder,RO: Pestic.Sci., 21 (1987) 143-53 [Eng].	Cinmethylin, techn.	Soil; Standards.	Equilibrate soil with Cinmethylin (1, 2, 5, 10, 20µg/ml) in 0.01M CaCl2, MeCN-extract for HPLC.	Not specified.	1) 100x4.6mm, Brownlee Spheri-5, MeCN.HOH (7:3), 1ml/min. 2) Glass 150x4.6mm, 5µm Zorbax G696. MeCN/HOH (1:1), 1.5ml/min.	1) MeCN soln. 50µg/ml. 2) 25µg/ml.	Cinmethylin behaviour in soil.
99	Greenhalgh,R; Shoolery,JN: Anal.Chem., 50 (1978) 2039-042 [Eng].	Fenitrothion contaminants.	Fenitrothion: technical; Standards.	Hexane soln.	[C] Waters M6000; [I] Stop flow valve; [D] Altex UV at 280nm: detection by 31P FT/NMR.	300x4mm DI-60, Merck 10µm silica gel. Butanol/isooctane (0.25 -> 40%) at 2ml/min.	Microcontaminants(8) from manufacture & rearrangement on storage only.	Major contaminants in technical grade fenitrothion.
100	Grorud,RB; Forrette,JE: JAOAC., 66 (1983) 1220-25 [Eng].	2,4-D; Dicamba; Mecoprop.	Formulations; Standards.	Sample in IS soln.: 0.95g salicylic acid + 9.0ml butyrophenone to 1l solvent (isopraparol/HOH, 2:1).	Official first action method specifying technical data of equipment: [C] 5000 psi pressure gage; [I] 10µl [D] 280nm.	Guard: Whatman Co:Pell ODS; 250x4.6mm Partisil 10/25 ODS-3. MeCN/NaOH(17.7N)/HOH, pH 2.69 with H_3PO_4 (220/16.9/ -> 1l); Idem. (330/16.9/ -> 1l), 2.0ml/min.	Only statistical data from collaborative study.	Quantification of pesticide contents & impurities in mixtures (major impurity o-chlorophenoxyacetic acid).
101	Grorud,RB; Forrette,JE: JAOAC., 67 (1984) 837-39	2,4-D; Dicamba; Mecoprop.	Formulations.	Dissolve in IS-soln.(0.95g salicylic acid + 9.0ml butyrophenone in 1l Isopropanol/HOH (2:1)	Collaborative study, only technical specifications: [C] 5000psi pressure gage; [I] 10µl; [D] 280nm.	Guard:Whatman Co:Pell ODS; 250x4.6mm Partisil 10/25 ODS-3. HOH/MeCN/17.7N NaOH (725:220:16.9) & HOH.MeCN/17.7N NaOH (610:330:16.9), 2ml/min.	Coefficient of variation 0.8 - 10% .	Collaborative study between 11 laboratories for method official first action.
102	Grou,E; Radulescu,V; Csuma,A: J.Chromatogr., 260 (1983) 502-06 [Eng].	Aldicarb; Baycarb; Carbaryl; Carbofuran; Chlorpropham; Isoprocarb; Metolcarb; Methomyl; Propoxur.	Soil; Water; Standards.	CH_2Cl_2-Extraction of: (1) acidified HOH; (2) filtered NH_4Ac-homogenate of soil with NaCl. Soil with >3% organic matter on Florisil column.	[C] Hewlett-Packard 1084 B; [D] uv	Stainless steel 250x4.6mm, 10µm LiChrosorb RP-18, MeOH/HOH - step gradient: 16min. 40%, +1min 40-60%, contd 60% at 1.2ml/min.	0.005-0.010 µg/g in water, 0.050-0.10 µg/g soil samples; 62-109%.	Multi-residue determination in single procedure.

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103	Guhlmann,A; Hollweg,J; Seehofer,F: Beiträge Tabakforschg. Intnl. 12 (1983) 87-91 [Ger].	Aldicarb metabolites.	Tobacco: leaves.	MeOH (>5:1) extract, residue + HAc/H2O2 (1:1), neutralize, CH_2Cl_2 extract, to Waters Sep-Pak cartridge, acetone eluate, evpn., MeOH soln to HPLC.	[C] Spectra-Physics SP 8000; [D] Schoeffel SF 770 at 205nm.	Precolumn: 40x4.6mm; 250x4.6mm, 5µm RP 18. I): MeOH/HOH (17:83) for 15min., Idem (50:50) for 5min; 1.6ml/min.	Spikes of 10mg/kg analysed.	Aldicarb residues (also sulfoxide) determined as sulfone.
104	Guillemin,CL; Gressin,JC; Caude,MC: J.HRC & CC., 5 (1982) 128-33 [Eng].	Chlorpromazine.	Formulations: blend; Standards.	Dissolve Chlorpromazine + Promethazine (synthetic blend) & chloro-3-phenothiazine (deferred Standard) in MeOH.	[I] Prolabo SDE, selector three-way valve for sample or deferred standard.	100x0.635mm Spherosil Normatom XOA 600-L. 2,2,4-trimethylpentane/di-isopropyloxide/MeOH/$(C_2H_5)_3N$/HOH (44.91:49.77:4.86:0.20/0.26), 1ml/min.	Not specified.	Deferred standard method saves time & avoids addition of internal or external standards.
105	Gustafsson,KH; Fahlgren,CH: J.Agric.Food Chem., 31 (1983) 461-63 [Eng].	Thiram; Ziram; Zineb.	Apple; Lettuce; Pear; Potato; Strawberry; Tomato; Water.	Outer pieces, with alkaline EDTA + i-Cystein, Na-salt soln. filtered, methylated & extracted for HPLC analysis.	Spectra Physics: [C] 3500; [D] 770.	Stainless steel 200x4mm, Precolumn 50x4mm, both packed with 5µm Nucleosil RP-18. HOH/MeCN (3:2), 1.2ml/min.	Zineb, Ziram, Thiram: 0.02, 0.01, & 0.01 mg/kg; 61-80% when spiked with 0.01-5mg/kg.	No degradation of dithiocarbamates & l-cystein with EDTA deactivates Na-salts.
106	Gustafsson,KH; Thompson, RA: J.Agric.Food Chem., 29 (1981) 729-32 []Eng.	Metham-Na; Metham-Na metabolites; Nabam; Propineb; Thiram; Zineb; Ziram.	Apple; Standards.	1) Thiram: $CHCl_3$ extract evptd., to silicagel, hexane elution, residue in MeOH. 2)Others: extract with EDTA, residue from $CHCl_3$/hexane soln. to HPLC.	Spectra-Physics: [C] 3500; [D] 770 variable uv.	Precolumn: ø=18mm, 10g 0.063-0.2mm silicagel 60; stainless steel 200x4mm, 5µm Nucleosil RP18,. HOH/MeCN (7:3) at 0.8ml/min.	Thiram:0.01; Ziram:0.01; Zineb: 0.05 µg/g apples. 61-88%	Alkaline EDTA converts residues into Na-salts.
107	Görner,A; Rückemann,H: Landw.Forsch., Sonderheft 36 (1979) 420-25 [Ger].	Aldicarb; Aminocarb; Benomyl; Carbaryl; Carbofuran; Dimetilan; Mercaptodimethur; Methomyl; Promecarb; Thiophanate-methyl.	Apple; Cabbage; Cucumber; Lettuce; Radish; Strawberry; Tomato.	50g Sample + 10ml $CHCl_3$ extract.	[C] Latex System 2000.	Inox steel: 25x4mm, 5µm Whatman Partisil, 90x4.6mm, Merck Lichrosorb SI 60. n-Hexane/isopropanol : (100:4), 2.4ml/min.& (100:8), 5ml/min.	0.5-50ng; 80-100%.	Analysis of numerous samples per day.

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108	Hamann,R; Kettrup,A: Chemosphere, 16 1987 527-36 [Eng].	2,4-D; 2,4-DB; Dicamba; Dichlorprop; Fenoprop; Mecoprop; MCPA; MCPB.	Water: surface; Water: distilled; Water: drinking; Standards.	CH_2Cl_2 liq.-liq. extraction; on-line enrichment on Lichrosorb-NH2, elution, HPLC.	[P] Waters M6000A; [D] 655A-22 variable uv.	1) Merck LiChrosphere 100CH-18/II, 2) LiChrocart HPLC cartridge125-4. MeOH/HOH/HAc (145:130:15), 1ml/min.	1-0.001µg/g & 1-0.02µg/g; 81-108%.	A column-switching device for on-line enrichment is described.
109	Hargreaves,PA; Melksham,KJ: Pestic.Sci., 14 (1983) 347-53 [Eng].	Carbaryl; Carbaryl metabolites.	Wheat: grain.	MeOH-extract residue(HOH traces) evpn. with EtOH, EtOH/hexane (5:45) take-up, filter any precipitate, to HPLC.	[P] Waters 600A; [I] Rheodyne; [D] Cecil CE 212 at 280nm.	Pre-column 50x4.5mm, Whatman Partisil 10 silica; 150x4.5mm Whatman Partisil 5. EtOH/hexane (1:9), 1.5ml/min.	0.1mg/kg, 1-naphthol: 0.3mg/kg; 86-97% .	Single-injection clean-up procedure with colorimetric method for aged residues.
110	Harvey,GJ: J.Liq.Chromatogr., 9 (1986) 1563-76 [Eng].	2,4-D; 2,4-D-amylester; 2,4-DB; Dichlorprop; 2,4-D-methylester; Fenoprop; MCPA; 2,4,5-T.	Standards: technical.	Purification by recrystallisation, conversion into acids or esters.	[C] Varian Vista 5000.	1) Varian MCH-10: Stainless steel 300x4mm, 10µm C-18 ODS; 2) Waters Radial-Pak C18 cartridge. MeCN/2%HAc (50:50) & 60:40) resp.; 2ml/min.	±1% accuracy & reproducibility.	Phenoxyacid-ester identification in mixed ester formulations & their acid content.
111	Hill,KM; Hollowell,RH; Dal Cortivo,LA: Anal.Chem., 56 (1984) 2465-68 [Eng].	Aldicarb; Carbaryl; Carbaryl metabolites; Carbofuran; Carbofuran metabolites: 3-hydroxycarbofuran; Methomyl; Oxamyl.	Water: well; Standards.	Filtration Supelco-8471 macropipetter.	[C] Perkin-Elmer Ser.3B.Post Column Reaction System: Kratos FS 970LC; [D] Fluorometer.	Guard: 300x4.6mm Brownlee RP-8; 250x4.6mm, 6µm DuPont Zorbax C8. MeOH/HOH, 1.5ml/min.	8-40µg/g ; 98-106% at pH 6.	Individual quantitation ofCarbofuran, Oxamyl & Aldicarb (metabolites).
112	Hoke,SH; Brueggemann,EE; Baxter,LJ; Trybus,T: J.Chromatogr., 357 (1986) 29-32 [Eng].	2,4-D; 2,4,5-T; Fenoprop.	Water; Water: creek; Water: river.	Purification System Millipore Milli-Q; Stock MeOH solution 1000mg/l.	Sample concn.column Baker-10-SPE.	250x4.6mm, 6µm Zorbax C8. MeOH/1%HAc (68:32), 1.2ml/min.	250-10 g/l; 29-74% in river water.	As a rapid scanning method only (low recovery).
113	Hoodless,RA; Sidwell,JA; Skinner,JC; Treble,RD: J.Chromatogr., 166 (1978) 279-86[Eng].	Atrazine; Barban; Binapacryl; Captan; Carbaryl; Chloroxuron; Dodine; Folpet; Propoxur; Thiram.	Standards.	None	[I] Waters 6000A (with 660); [D] Cecil CE212 variable uv.	Stainless steel 150x4.6mm, 5µm SPherisorb ODS. MeCN/HOH (25 -> 75), 1ml/min.	Detected values of pesticide residues expressed in terms of a suitabilty factor as required by EEC directives.	Multiresidue screening & quatitation expressed as a suitabilty factor for maximum permissible limit.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
114	Hoogenboom,JJL; Rammell,CG: Analyst, 109 (1984) 787-88 [Eng].	Diphacinone.	Pollard: bait; Standards.	MeOH extract of pulverised bait + buffer (tetrabutylammonium hydroxide) for HPLC.	Tracor [P] 951; [I] Rheodyne 7125; [D] 970 variable uv at 286nm with Perkin-Elmer Sigma 10 data station.	250x4.6mm Whatman Partisil-10 ODS. MeOH/buffer (4:6) at 1.75ml/min.	2mg/kg, 90-95%.	Lower recoveries with MeOH extraction in presence of buffer; coextractives interference at higher recovery.
115	Hunter,K; Sharp,EA: J.Chromatogr., 437 (1988) 301-05 [Eng].	Bromadiolone; Chlorphacinone; Coumatetralyl; Warfarin.	Liver: chicken; Liver: dog; Liver: goose; Liver: wild rabbit.	100mg ascorbic acid + 10g sample + Na_2SO_4 anhy., extract dry tissue with $CHCl_3$/acetone (1:1), clean-up by GPC-adsorption chromatography.	Hewlett-Packard: [C] 1090M with HP 79994A; or [C] Spectra-Physics SP8700; [I] Rheodyne 7125; [D] Perkin-Elmer LS-4 fluorescence + Waters PIC reagent.	250x4.6mm, 5-µm ODS-Hypersil. Chlorophacinone: MeOH/HOH (75:25); Coumatetralyl: MeOH/HOH (+PIC),(65:35); Warfarin: (58:42).	0.05-0.2mg/kg spikes; 85-88% and 92% respective to spikes.	Multiresidue analysis of animal tissue.
116	Hutchison,M; Shapiro,R; Sweetser,PB: Pesticide Biochem.& Physiol., 22 (1984) 243-47 [Eng].	Chlorsulfuron; Chlorsulfuron metabolites.	Flax; Linum usitatissimum L; Nightshade, black; Solanum nigrum L.	Apply ^{14}C-labelled pesticide to plant, after 24 hours wash leaves with acetone & keep frozen till HPLC analysis.	[C] DuPont 850; MS analysis of independently synthesized metabolite for confirmation of identity.	250x6.2mm DuPont Zorbax-ODS. HOH/MeCN both with 0.1%HCOOH 5%MeCN -> 100% MeCN in 30min., 2.7ml/min.	Coincident elution times for Metabolites of Chlorsulfuron by different plants.	Selective weed control possible (tolerance mechanisms in plants) due to differences of metabolites.
117	Jandera,P; Churacek,J; Butzke,P; Marz,M: J.Chromatogr., 387 (1987) 155-69 [Eng].	Chlorbromuron; Chlorotoluron; Diuron; Isoproturon; Fenuron; Fluometuron; Linuron; Metobromuron; Metoxuron; Monolinuron; Monuron; Neburon.	Standards.	None.	Waters [P] 600; [I] U6K; [D] M440 UV.	Stainless steel: 300x4.2mm, Silasorb-nitrile, -amine & -S; 300x3.8mm, Silasorb DEA; 300x4.6mm, Silasorb 300. Propanol/hexane (15:85), (20:80), (30:70), (40:60) resp.; 2ml/min.	Comparative retention only.	Study of different chemically bonded silicagel as column packing under defined conditions.
118	Jansen,H; Brinkman,UATh; Frei,RW: Chromatographia, 20 (1985) 453-60 [Eng].	Aldicarb; Mercaptodimethur; Methomyl; Propoxur.	Water: surface.	Trace enrichment on a micro column (2 x 1 mm) with 40µm C8.	[P] Gilson 302 & home-made syringe pump; [D] Varian Fluorichrom with on-line derivatization.	Glass-lined stainless steel 180x1.0mm, 5µm Spherisorb ODS-2. MeOH/HOH (50:50), 35,7 µl/min.	Aldicarb 0.5ng; Methomyl 0.4ng; Propoxur 1.0ng.	Post-column derivatization procedure.

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119	Johannson,B: J.Chromatogr., 378 (1986) 419-29 [Eng].	Disulfiram.	Heparin: human plasma.	On-line purification precolumn 50 x 3.9mm, Perisorb RP-18, 40µm.	[C] Varian 8500; [P] Vario Perplex II; [S] Rheodyne 7000 & 7001; [I] Rheodyne 7125.	250x3.9mm, LiChrosorb RP-18. MeCN/phosphate buffer 0.01M/l.	No pesticide found; only metabolites.	Degrades to metabolites in human plasma.
120	Jones,AS; Jones,LA; Hastings, FL: J.Agric.Food Chem., 30 (1982) 997-99 [Eng].	Carbaryl; Carbaryl metabolites.	Water: well; Standards.	Concentrate field-samples on Waters Sep PAK C-18 cartridge, store without referigeration.	Waters: [C] ALC/GPC 204; [P] 6000A & M-45; [I] U6K; [D] 440 uv	300x4.0mm µBondapak C18. MeOH/HOH (60:40), 1.0ml/min.	5ng/g.	Cartridge concentration enables reduced volume & uncooled storage of field samples.
121	Kawai,S; Goto,K; Kano,K; Kubota, T: J. Chromatogr., 442 (1988) 451-54 [Eng].	Carbaryl; Carbaryl metabolites.	Residues: aerial spray; Standards.	Air suctioned, acetone wash filter paper, residue in HOH, hydrolysed with 0.2ml 0.2M NaOH, neutralize, add 2-naphthol IS, aliquot to HPLC.	[C] Shimadzu 5A;[I] Rheodyne 7125; [D] Yanagimoto VMD 101 thin-layer electrochemical cell for 1-naphthol.	Stainless steel 250x4.6mm, 5µm Develosil ODS. MeCN/HAc/KCl (50:1:49), 1.0ml/min.	1ng/ml 1-naphtol (≅1.5ng/ml Carbaryl).	No interference due to 2-naphthol IS in Carbaryl & low-level metabolite 1-naphthol quantitation.
122	Kawano,Y; Audino,J; Edlund,M: J.Chromatogr., 115 (1975) 289-92 [Eng].	Paraquat.	Formulations: commercial.	MeOH (abs.) solution.	[C] Hewlett-Packard 1010-B; [D] Schoeffel SF-770 variable uv at 264nm.	Stainless steel 250x3.2mm, Vydac 30-44µm. MeOH abs. (0.2M dimethylamine.HCl), 4ml/min.	100ng.	Procedure simpler & rapid than colorimetry.
123	Kearney,PC; Karns,JS; Muldoon,MT; Ruth,JM: J.Agric.Food Chem., 34 (1986) 702-06 [Eng].	Coumaphos.	Solution: dip vat.	0.1ml sample + 0.9ml MeOH, centrifuged.	[C] Waters C-18; [P] M 6000A; [D] Perkin Elmer LC 95.	Waters C-18 Novapak. MeOH:0.75mM phosphoric acid (75:25), 2ml/min.	1.0 mg/l; 100% (by C14 labelled TLC).	Products of uv-ozonization and microbial metabolism in soil contained in used cattle dip vat soln.
124	Khazanchi,R; Roy,NK: JAOAC., 68 (1985) 138-40 [Eng].	Edifenphos.	Formulations.	Soln. of sample; standard by purification with preparative LC.	[C] Spectra-Physics 8000B; [D] 4000B variable UV-visible.	250x4.6mm Lichrosorb RP-8. MeCN/HOH (1:1) at 2ml/min. Preparative column: 250x10mm Lichrosorb RP-8: MeCN/HOH (1:3) at 5ml/min.	0.5µg/g. Compared with iodometric titration no significant differences with HPLC results.	Analysis at ambient temp. without IS; no interferences from surfactants of formulations.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
125	Kikta Jr,EJ: JAOAC., 69 (1986) 915-18 [Eng].	Carbofuran.	Formulations; Standards.	8-10mg(resolution 0.01mg) sample/20ml IS soln.: 0.5mg acetophenone/ml MeOH.	[P] 5000psi pressure up to flowrate; [I] Waters U6K, Rheodyne 7120 or 7125, Micrometrics 725 or equiv.; [D] uv with 8-12µl flow-thru cells at 280nm.	Guard (optional): Brownlee RP-18,No.140-200,Rheodyne 180-GU; 250x4.1mm, C18. HOH/MeOH (50:50), 1ml/min.	Statistics calculated for results of 19 collaborators; coefficient of variation 3%.	Resolving power differences of columns of same manufacturer requires generic column optimization.
126	Kikta Jr,EJ; Herbst,RM: J.Liq.Chromatogr., 2 (1979) 589-98 [Eng].	Azinphos-methyl.	Azinphos-methyl: technical; Formulations; Standards.	Mobile phase soln., with Carbofuran as IS added.	Waters: [P] 6000A with solvent programmer M660; [I] U6K; [D] 440 absorbance at 280nm.	300x2.1mm, 10µm bonded amine. C2H4Cl2/heptane/MeOH/MeCN (30: 669.78: 0.11: 0.11), at 1 -> 2 ml/min, 8min.	Not specified.	Column temperature control system (accuracy) & step-flow program (analysis time) recommended.
127	Kikta Jr,EJ; Stange,AE; Lam,S: J.Chromatogr., 138 (1977) 321-28 [Eng].	Carbofuran.	Standards.	None.	Waters: [P] 6000A + 660 Solvent Programmer; [D] 440 uv; [I] U6K	300x3.9mm, µBondapack C18. MeOH/HOH (50:50), 2ml/min.	Not indicated.	Use of controller for linear temperature programming.
128	Kirkland,JJ; Holt,RF; Pease,HL: J.Agric.Food Chem., 21 (1973) 368-71 [Eng].	Benomyl; Benomyl metabolites; Carbendazim.	Apple; Apricot; Bean; Beet; Cantaloupe; Carrot; Celery; Cherry; Corn; Cucumber; Grape; Orange; Peach; Pecan; Squash. Soil: sand; Soil: silt loam.	Crop: EtOAc extract, hydrolyse to 2-aminobenzimidazole, 0.1N H_3PO_4 soln.Soil: MeOH(acidic) extract, $CHCl_3$ clean-up, EtOAc partition, residue in H_3PO_4.	[C] Du Pont 830; [D] uv photometric at 254nm.	Du Pont 1000x2.1mm Zipax SCX (strong cation exchange resin).0.025N tetramethylammonium nitrate-0.025N HNO3 at 0.5ml/min.	0.05µg/g; 92, 71, 88% respectively.	Filtration of analysis solution prior to injection recommended.
129	Kobayashi,H; Matano,O; Goto,S: J.Pestic.Sci., 11 (1986) 81-84 [Eng].	Ethylenebisdithiocarbamate metabolites.	Lettuce; Onion; Tomato; Watermelon; Standards.	MeOH/HOH (3:1) extract, concentrate + HOH & hexane wash, concn., -> pH 8 (10% NaOH) on Extrelut column, CH_2Cl_2 eluate evptd., MeOH/HOH (95:5) to HPLC.	[C] TRI ROTAR-V; [D] UVIDEC-100-V.	Stainless steel 250x4.6mm, Finepak SIL C18. HOH/MeOH (95:5) at 0.8ml/min.	0.4µg/g; 76-90%.	Precolumn enrichment of hexane washed extracts improves recoveries & analysis time.
130	Koubek,KG; Ussary,JP; Haulsee,RE: JAOAC., 62 (1979) 1297-301 [Eng].	Brodifacoum.	Rat; Standards.	Extract MeOH/$CHCl_3$ (10:90), GPC: Bio-Beads SX-3, to Waters SEP-PAK silica, evpn., mobile phase soln.	Waters: [C] 244: [P] 6000A; [I] U6K; [D] 440 uv.	300x3.9mm µPorasil. CH_2Cl_2/cyclohexane/HAc glac. (25:75:0.5) at 1.5ml/min.	cis-isomer: 257.6ng, trans: 142.4ng; 92-107%.	Applicability study for separated isomers from animal tissue.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
131	Krause,RT: J.Chromatogr., 185 (1979) 615-24 [Eng].	Aldicarb; Bendiocarb; Bufencarb; Carbofuran; Carbaryl; Landrin; Mercaptodimethur; Methomyl; Oxamyl; Propoxur metabolites.	Standards.	None.	[C] Altex 322MP programmable LC; [I] Valco 16 AS-7000; [D] Perkin-Elmer 650-10LC Fluorescence.	250x4.6mm, 6µm Zorbax C-8 or CN. MeCN in HOH 12 -> 70% (30min), 1.5ml/min.	10ng.	Applicability of post column fluorometric labelling for carbamate insecticides.
132	Krause,RT: J.Chromatogr., 442 (1988) 333-43 [Eng].	Bufencarb; Carbaryl; Carbofuran; Isoprocarb; Mercaptodimethur.	Apple; Cabbage; Grape; Tomato; Standards.	MeOH extract,liq.-liq. partition and silanized Celite adsorption clean-up, post-column hydrolysate detection as phenolic moiety.	[C] Varian 2080; Spectra-Physics: [C] SP8700XR; [I] SP8780XR autosampler; [D] ESA 5010 & Coulochem 5100A (electrochemical cell+controller)	Stainless steel: Guard C. 20x2mm 30-40-µm Perisorb RP-8, Analyt.C. 250x4.6mm 6-µm spherical Zorbax C-8. MeCN/HOH (50:50) at 1.5ml/min & after injection gradient (50 -> 70 , 25 min.).	0.01µg/g, linear response range 3-60ng, 99%.	Confirmatory data from post column hydrolysis to phenolic moiety substantiates primary HPLC residue findings.
133	Krause,RT: JAOAC., 68 (1985) 726-33 [Eng].	Aldicarb; Aldicarb metabolites; Bufencarb; Carbaryl; Carbofuran; Carbofuran metabolites; Methiocarb; Methomyl; Oxamyl.	Grape; Potato.	MeOH extract, concn., MeCN (NaCl)/petroleum ether wash (coextracts), CH_2Cl_2-partition, dry, residue in CH_2Cl_2 to chromatography.	[C] Beckmann 322 MP; [I] Valco 16 AS-7000; [D] Perkin-Elmer 650-10LC for fluorometric detection.	Guard: 70x2.1mm, Whatman 25-37µm Co-Pell ODS: 250x4.6mm, 6µm Zorbax C-8 or equiv.	Limit of quantitation: 0.01mg/kg; repeatability coefficient 4.7% between 8 collaborators.	Collaborative study in stages for official first action method.
134	Krull,IS; Mills,K; Hoffmann,G; Fine,DH: J.Anal.Toxicol., 4 (1980) 260-62 [Eng].	Atrazine metabolites; Carbaryl metabolites.	Mouse.	Mice gavaged with nitrosation mixture; powdered (liq.N2); MeCN-extract; residue dissolved for HPLC.	[P] Altex 110A; [I] Rheodyne 7010; [D] Thermo Electron Analyzer 502/LC.	300x4.2 mm, 10µm Lichrosorb Si60. Acetone/iso-octane (2-5: 98-95), 1.5ml/min.	≈50%.	In vivo formation of nitroso compounds in mice.
135	Kulshrestha,G; Khazanchi,R: J.Chromatogr., 318 (1985) 144-48 [Eng].	Isoproturon.	Standards; Soil.	Pesticide recrystallized fractions from benzene; Spiked soil extracted with MeOH,residue in mobile phase.	Spectra Physics [C] SP 8000B; [D] 4000B variable uv-vis.	Stainless steel 250x4.6 mm, LiChrosorb RP-8. MeCN/HOH (1:1), 1.5ml/min.	0.5ppm; 100 - 103%.	Conditions for direct assay of pesticide in soils established.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
136	Kvalvåg,J; Elliot,DL; Iwata,Y; Gunther,FA: Bull.Environ.Contam. & Toxicol., 3 (1977) 253-60 [Eng].	Parathion; Parathion metabolites.	Dust: soil; Dust: foliar.	Soil: acetone/HOH (9:1)- extract and foliar: HOH-washed (+surfactant), partition in hexane, both to HPLC.	Waters: [C] 660 solvent programmer; [P] 6000; [D] Perkin-Elmer LC-55 variable UV/vis spectrophotometer.	Stainless steel 500x2.2mm: Bondapak C18 ODS & Waters prepacked Carbowax 400, both on 37-50µm Corasil silica. Soil dust: MeCN/HOH (10:90) -> (100:0) 13min., foliar: dioxane/hexane (1.5:98.5); 1.0ml/min.	Concentration range analyzed: Soil - 10-220µg/g; foliar - 0.4/3µg/cm².	Results confirmed by GC.
137	Kvalvåg,J; Ott,DE; Gunther,FA: JAOAC., 60 (1977) 911-17 [Eng].	Azinphos-methyl; Azinphos-methyl metabolites.	Soil: surface dust; Residues: leaf dislodgable.	Extracts in: $CHCl_3$ of aqueous washings of leaves, hexane/acetone (1:1) of soil dust.	Waters: [P] 6000; [I] 660 solvent programmer with injector; [D] Perkin-Elmer LC-55 variable uv with micro flow-cell.	Waters P/N 27324 stainless steel 300x4mm, <10µm µBondapak C18 Corasil. MeOH/HOH (60:40).	Metabolite: 0.057-0.014 µg/sq.cm (leaf), 5.2µg/g - 1.4µg/g; 96% .	Exposure of orange grove worker & persistence (59 days) studied.
138	Lanouette,M; Pike,RK: J.Chromatogr., 190 (1980) 208-11 [Eng].	Aminocarb.	Formulations.	Sample dissolution or dilution.	[P] Waters M6000; [I] Rheodyne 7105; [D] Waters 440 uv & Bio ElCD electrochemical.	Stainless steel 250x4.6 mm, 10µm C8 silica. Phosphate buffer(pH 7.97)/ MeOH (50:50), 2ml/min.	10ng to 10µg (uv), 10ng-1µg (elecrochemical detector).	Study of use of buffered mobile phase for improvement of known method.
139	Launer,JE: JAOAC., 62 (1979) 11-14 [Eng].	Ethion.	Formulations: powder, oil; Standards.	Waters column: standard & oil formulation in MeOH; powder: in MeOH + IS-soln.(0.24g pentachloronitrobenzene in 200ml MeOH); DuPont column: in MeCN.	Waters: [C] 6000A; [D] uv at 254nm.	1) Waters 300mmx3.9mm, µBondapak/C18/Porasil B; 2) DuPont 500x2.1mm; ODS Permaphase. 1) HOH/MeOH (90:10); 2) HOH/MeCN (40:60).	Coefficient of variation of determinations from collaborating labs.	Procedure for adoption as official first action recommended.
140	Lauren,DR: JAOAC., 67 (1984) 655-57 [Eng].	Carbofuran.	Soil.	MeOH extract, partition in hexane/MeOH/HOH (2:4:1), aqueous layer dilution in MeOH/HOH (20:80) for HPLC.	[C] Spectra-Physics 740B; [I] Valco 7000; [D] Tracor 970A or Shimadzu SPC-2A variable uv at 280nm.	1) Brownlee 250x4.6mm, RP-8; 2) 150x4.6mm, Zorbax C-8. MeOH/HOH at 1.2ml/min: (44:56) 6Min., -> (52:48) +10Min -> (64:36).	0.38µg/g; 90%	Direct rapid quantitation of high residue levels in soil for entomological field trial.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
141	Lauren,DR; Taylor,HJ; Rahman,A: J. Chromatogr., 439 (1988) 470-75 [Eng].	Bromacil; Clopyralid; Dicamba.	Asparagus; Standards.	Alkali digest sample, $CHCl_3$ clean-up, +NaCl & HCl, EtAc extract evpn., residue: Clopyralid in 1% HAc, others in MeOH/HOH (1:1), hexane wash, for HPLC	[P] Spectra-Physics 740B; [I] Rheodyne 7120 or Micrometrics 725; [D] Shimadzu SPD-2A variable uv with ion-pairing reagent for Dicamba.	Guard Brownlee MPLC RP-8; 250x4.6mm Chrompack CPSher C8. HOH/MeOH (52:48), MeOH/1%HAc (10:90) & HOH/MeOH (60:40); 1.6ml/min.	Bromacil: 0.02-4.0mg/kg, 64-100%; Clopyralid: 0.03mg/kg, 85-106%. Dicamba: 0.07mg/kg, 64-79%.	Residue decay control during harvest required due to usage practice.
142	Lawrence,JF: J.Chromatogr.Sci., 14 (1976) 557-59 [Eng].	Benzoylprop-ethyl; Dicloran; Linuron; Propanil; Terbacil.	Cabbage; Corn; Potato; Wheat.	Acetone extract partitioned with petrol ether/CH_2Cl_2 (1:1), residue in hexane for column clean-up.	[P] Waters 6000A; [D] 440.	250x2.8mm Stainless steel, 5µm LiChrosorb Si 60. Isopropanol/isooctane	Not given.	Electrochemical conductivity detection in comparison to GLC-ECD.
143	Lawrence,JF: JAOAC., 59 (1976) 1066-70 [Eng].	Chlorbromuron; Chloroxuron; Diuron; Fenuron; Fluometuron; Fenuron; Linuron; Monuron.	Cabbage; Corn; Potato; Turnip; Wheat.	Acetone extract, hexane/CH_2Cl_2 (1:1) partition, aq.phase (+NaCl), extract with CH_2Cl_2, residue in hexane, clean-up on Florisil column.	[P] Waters 6000A; [I] Altex; [D] 440uv at 254nm.	Stainless steel 250x2.8mm, 5µm LiChrosorb Si60. Isopropanol/isooctane (5,10 or 20 in 100 total) at 0.5ml/min.	0.4-1.3ng; ≥80%.	Direct analysis without derivatization (GLC) for routine screening.
144	Lawrence,JF; Iverson,F; Hanekamp,HB; Bos,P; Frei,RW: J.Chromatogr., 212 (1981) 245-50 [Eng].	Ethylenebisdithiocarbamate metabolites.	Standards; Urine: rats.	1) 1ml urine + 250mg solid NaCl + 5ml EtAc, org. layer for HPLC; 2)Urine through 0.45µm Millipore filter.	[C] Waters 6000A; [D] Schoeffel 770 variable uv.	i) 250 x 3.2mm, 10µm LiChrosorb Si 60; 2) 250 x 4.6mm, 5µm Supelco LC-18. 1)EtOH/NH_4OH/hexane (15:0.5:84.5); 2) 0.1M KNO3(pH3).	1-15ng metabolites, 90%.	Metabolite thioimidazole confirmed in urine of ETU treated rats.
145	Lawrence,JF; Leduc,R: J.Agric.Food Chem., 25 (1977) 1362-65 [Eng].	Carbofuran; Carbofuran metabolites.	Cabbage; Corn; Potato.	Acetone extract, partition CH_2Cl_2/hexane (1:1) & (30:70), soln. clean-up on Florisil, acetone hexane (15:85) eluate for HPLC.	[P] Waters 6000A; [I] Valco; [D] 440 uv dual cell; keto-metabolite: 254nm, others 280nm.	250x2.2mm, 5µm LiChrosorb Si 60. 2-propanol/2,2,4-trimethylpentane (3-8:97-92) at 1.0ml/min.	0.02mg/kg (0.02mg/kg for 3-ketocarbofuran); 68-110% .	HPLC parameters for direct determination of Carbofuran in crops.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
146	Lawrence,JF; Leduc,R: JAOAC., 61 (1978) 872-76 [Eng].	Carbaryl.	Corn; Potato.	Acetone extract, into CH_2Cl_2/hexane, organic phases residue in hexane/CH_2Cl_2 (70:30) to Florisil column, elute, fluorescence derivative for HPLC.	[P] Waters 6000A; [D] 440 uv & Data Control Fluoro-Monitor 1209; [I] Valco	Brinkmann 250x2.2mm, 5µm LiChrosorb Si60. Trimethylpentane/isopropanol: Carbaryl (95:4), metabolites: trimethylpentane/dioxane (95:5) at 1.0ml/min.	0.6ng; 90% .	Fluorescence derivative for confirmation of uv results studied.
147	Lawrence,JF; Lewis,DA; McLeod,HA: J.Chromatogr., 138 (1977) 143-50 [Eng].	Carbofuran.	Turnip.	35g spiked with 0.1-1.0µg/g + acetone: clean-up, residue in isooctane.	[P] Waters 6000A; [D] 440uv.	Stainless steel 250x2.8mm, 5µm Lichrosorb SI-60. Isopropanol/isooctane (5:95), 1.0ml/min.	90ng.	Poor sensitivity with HPLC.
148	Lawrence,JF; Panopio,LG; McLeod,HA: J.Agric.Food Chem.,28 (1980) 1325-27 [Eng].	Asulam.	Wheat whole: cereal, flour; Wheat: refined.	MeCN extraction, clean-up with hexane, evaporate to 0.2ml, take-up with mobile phase.	Waters: [P] 6000A; [D] 450 variable uv & 440 fixed uv.	250x3.2mm Lichrosorb RP-8. MeCN/HOH (20:80), 1.0ml/min.	0.02µg/g, 81-89% .	Interference due to coextractives not detected at 280nm although 254nm peak is most sensitive.
149	Lawrence,JF; Panopio,LG; McLeod,HA: J.Agric.Food Chem., 28 (1980) 1019-22 [Eng].	Benzoylprop-ethyl; Bromoxynil-octanoate.	Wheat: cereal; Wheat refined: bread, flour; Wheat whole: bread, flour.	MeOH extract + NaCl + HOH, partition with CH_2Cl_2, evpn.to oily residue, hexane soln. clean-up on 10g HOH-deactivated Florisil, eluant 15% acetone/hexane	Waters:[P] 6000A; [D] 450 variable uv at 228nm	Altex 250x3.2mm 10µm Lichrosorb RP-8. MeOH/HOH (65:35) & (75:25).	0.05µg/g, 75-108%.	Direct routine analysis (simultaneous monitoring) of all wild oat herbicides in use in Canada.
150	Lawrence,JF; Renault,C; Frei,RW: J. Chromatogr., 121 (1976) 343-51 [Eng].	Crufomate; Fenchlorphos: Fenitrothion; Fenthion; Parathion-methyl.	Water; Standards.	Hydrolysis to phenol, + dansyl chloride derivative for fluorescence detection.	[P] Haskel 17082-3; [D] Lab Data Control 1209 fluorescence.	Stainless steel 400x2.4mm, 10µm Brinkmann silica gel. $CHCl_3$/hexane (10:90) at 1ml/min.	5-10 ng.	Direct analysis of fluorescence derivative of organophosphorus pesticides which hydrolyse to phenols.
151	Lesser,JH; Massil,SE: JAOAC., 70 (1987) 638-40 [Eng].	Captan; Folpet.	Standards.	Spike pesticides with $CHCl_3$-soln. of impurity: 1% tetrahydrothalimide (Captan); 1% phthalimide (Folpet).	[C] Varian 5020; [D] UV-1 fixed uv (254nm).	Chrompack 250x4.6mm, 10µ silica. CH_2Cl_2, 2ml/min.	Recovery 95-104%.	Quantitation of pesticides by HPLC in solutions spiked with impurities.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
152	Liang,D; Shiga,N; Matano,O; Goto,S: J. Chromatogr., 387 (1987) 385-92 [Eng].	Dinocap; Dinocap metabolites.	Apple; Grape; Pear: jap.	20g of 1kg. homogenate + 5ml 1M HCl + 100ml acetone; evpn.-residue + hexane: final take-up in MeCN.	[C] UV Spectrophotometer UVIDEC-100 V	150x4.6 mm, Cosmosil 5 C18. MeOH/HOH/HCl (330:70:1).	Not given. Recovery: Apples 92-99%; Grapes 85-98%; Pear 85-100%	Quantitation of components of techn.grade mixtures.
153	Lin,Li-Ying; Cooper,WT: J.Chromatogr., 390 (1987) 285-95 [Eng].	Aldicarb; Aldicarb metabolites.	Standards.	Solvent: MeCN/HOH/H_2SO_4 (200:1200:1.3) Dilution of stock solution.	[C] IBM 9533; [I] Rheodyne 7125; [D] LC9552 fixed uv at 254nm; Hitachi Model 100-10 with Model 155-00 flow cell	250x4.6mm: IBM 5µm Me-, octyl- & cyanopropyl-silica & Alltech 5µm Adsorbosphere phenylmethyl silica. HOH/MeOH (80:20), 1.2ml/min.	50-200µg/l.	This study for selection of column type, mobile phase, and pH etc.-
154	Lin,Shen-Nan; Caprioli,RM; Murphy,SD: J.Agric.Food Chem., 31 (1983) 756-59 [Eng].	Azinphos-methyl.	Liver: mouse; Standards.	400 nmol of Azinphos-methyl soln. added to incubation mixture of mice liver for in vitro metabolism study.	Waters: [C] M-6000; [I] U6K; [D] 450, variable uv.	300x4mm, µ-Porasil. CH_2Cl_2/MeCN/HAc glac. (77.5:22.5:0.02), 1ml/min.		Anticholinesterase assay applicable only to O-analog.
155	Lin,Shen-Nan; Chen,Chung-Yiing; Murphy,SD; Caprioli,RM: J.Agric.Food Chem., 28 (1980) 85-88 [Eng].	Azinphos-methyl; Azinphos-methyl metabolites.	Liver: mouse; Standards.	Metabolite spikes + pesticide + mice liver solution, incubate, EtAc extract + IS (7µg in MeCN), residue in MeCN.	Waters: [C] M-6000; [I] U-6K [D] 450 variable uv.	300x4mm, µ-Porasil. CH_2Cl_2/MeCN/HAc glac. (77.5:22.5:0.02) at 1ml/min.	Oxon: 9ng,86-112%; Benzazimide: 5ng, 75-105%.	Study of metabolism of Azinphos-methyl confirmed by MS.
156	Lindner,W; Posch,W; Lechner,W: Z.Lebensm.Unters.Forsch., 178 (1984) 471-74 [Ger].	Cymoxanil.	Grape.	Frozen grapes/1%HAc (50g:50ml); clear supernatant on multicolumn HPLC.	Kontron:[P] two 410; [I] Tracor 670, [D] Spectrophotometer 720LC variable uv at 240 or 269nm.	250x4mm, 10µm Spherisorb Phenyl, 7µm Lichrosorb RP 8, 4.6x250mm & 200mm. HOH/MeOH/HAc: (80:20:1), (60:40:1), (60:40).	50 µg-2mg/kg; 0.04-5mg/kg; 92%.	uv-vis diode array detector enables series analysis by automation & computer peak-evaluation.
157	Lindner,W; Ruckendorfer,H: Internat.J.Environ.Anal.Chem., 16 (1983) 205-18 [Eng].	Pyridate metabolites.	Standards; Barley: straw; Barley: grain; Maize; Oat; Poppy: seeds; Rape; Wheat.	Selective, pH controlled extractions (org.& aq. phase) and hydrolyzation of Pyridate.	Kontron: [P] 410; [I] Rheodyne 7210; [D] 720LC uv	Two columns: 1) Phase Sepn. 250 x 4.6 mm, 5µm Spherisorb; 2) 10 µm Nucleosil, for simultaneous fractionation & subsecuent on-line programmable transfer for hplc analysis.	Recovery:50-70%.	Procedure for complex matrices.

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158	Lokke,A: J.Chromatogr., 200 (1980) 234-37 [Eng].	Amitrole.	Potato; Beet: fodder.	EtOH extraction, MeCN & acid digestion clean-up, H-acid coupling, polyamide chromatographic clean-up, to ion-pair detection.	Waters: [C] 6000-A; [D] 400; ion-pairing (reagent PIC) HPLC at 546nm.	300x3.9mm, Waters 10µm µBondapak C18. MeOH/HOH (9:11), 1.5ml/min.	0.005-0.01mg/kg.	MeCN and acid-digestion clean-up step decisive for inhibition of colour formation by H-acid coupling.
159	Lord,KA; Cayley,GR; Smart,LE; Manlove,R: Analyst, 105 (1980) 257-61 [Eng].	Carbaryl.	Honeybee; Standards.	Macerated bee, CH_2Cl_2 extract, Florisil column clean-up, CH_2Cl_2 eluate, residue in MeOH for fluorescence detection.	[C] DuPOnt 830; [D] Cecil CE212 variable uv at 215nm; Perkin-Elmer 2000 fluorescence (313/467nm).	Stainless steel 500x2mm, Permaphase ODS or Co-Pell ODS. MeOH/phosphate buffer (1:4) at 1.05ml/min.	0.01µg/bee.	Florisil column clean-up eliminates interference in flourescence detection.
160	Luchtefeld,RG: J.Chromatogr.Sci., 23 (1985) 516-20 [Eng].	Chloroxuron; Chlorbromuron; Chlorotoluron; Diuron; Fenuron; Fluometuron; Isoproturon; Linuron; Metobromuron; Metoxuron; Monolinuron; Monuron; Neburon; Siduron.	Standards; Carrot.	Extraction & partition of one carrot sample.	[P] Altex 322; [D] uv lamp BHK 80-11781-01 with teflon capillary coil;Perkin-Elmer 650-10S spectrofluorometer.	Alltech 250x4.6 mm, C-18. MeCN/HOH (30 -> 80, 30min), 1ml/min.	Not indicated.	Applicability of a photo post column degradation (PCD) & fluorometric detection.
161	Luchtefeld,RG: JAOAC., 70 (1987) 740-45 [Eng].	Chlorbromuron; Chlorotoluron; Chloroxuron; Diuron; Fenuron; Fluometuron; Isoproturon; Linuron; Metobromuron; Metoxuron; Monolinuron; Monuron; Neburon; Siduron.	Asparagus; Carrot; Celery; Corn; Grape; Onion; Potato; Strawberry; Standards.	MeOH extract spiked sample (0.05 & 0.5 µg/g), (+ satd.NaCl), hexane wash, CH_2Cl_2 partition, concn. -> 3ml, Florisil clean-up, acetone/MeCN (20:80) eluate.	[C] Beckmann 322; [I] Valve loop; [D] Perkin-Elmer 650 10S after post-column photolysis & derivatization (BHK 80-11781-01 uv lamp).	250x4.6mm ODS, Econosphere C-18. MeOH in HOH 40 -> 80% in 30min., & MeCN in HOH 30 -> 80% in 30min; 1ml/min.	95-98% of Chlorbromuron, Chloroxuron, Diuron, Fluometuron, Linuron, Metobromuron spikes in 8 food crops.	Postcolumn photolysis & derivatization with gradient elution (2mobile phase systems) enables selective quantitation.
162	Luckas,B: Z.Lebensm.Unters.Forsch., 184 (1987) 195-97 [Ger].	Diphenyl; Phenylphenol o-; Thiabendazole; Diphenylamine; Ethoxyquin.	Lemon.	Thin peel from 0.1kg sample + 50ml CH_2Cl_2+10g Na_2SO_4 anhy.,purify with n-hexane; residue dissolved in eluant.	[D] Soma 310:ERC, Merck F1000 Fluorometer, BCMA-JR electrochemical.	Nucleosil 7-C-18; RP-18. Formate buffer/MeOH (40:60), 1ml/min.	10ng,0.1mg/kg;80-95% .	Comparative study with 3 detector types.
163	Lupan,S: JAOAC., 71 (1988) 26-28 [Eng].	Cyhexatin.	Formulations.	Sample soln. in IS soln.(1g n-decylbenzene + HOH/HAc glac./MeOH (49:1:950) ml for HPLC.	[C] LC with peak height integrator; [I] 10µl sample loop; [I] uv at 214nm, Cyhexatin peak 7min, 75% full scale.	Stainless steel 250x4.6mm, 10µm ODS bonded silica. MeOH/HOH/HCl/NaCl (93:7:0.001M:0.005 M).	Collaborative study (20 laboratories) statistics.	Cyhexatin analysis in presence of chloride ions.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
164	Léger,DA; Mallet,VN: J.Agric.Food Chem., 33 (1985) 748-51 [Eng].	Aminocarb metabolites.	Standards.	HOH (organics free) hydrolyse: 1) at 25°C, 2) at 35-40°C (pH≈10 NaOH); +NaCl, dry, EtAc extract, concn., TLC sepn., for HPLC.	Spectra-Physics [C] SP8000B [D] uv at 254nm.	Preparative Whatman Partisil M9,10/25 rp ODS. HOH/MeCN (80:20) at3.0ml/min. Analysis by MS, NMR & X-ray crystallography.	HPLC used for purification only.	Detection ofAminocarb metabolites in solns.(pink-reddish coloration).
165	Maas,G; Pestemer,W; Krasel,G: Z.Pflanzenkrankh.Pflanzenschutz, Sonderh.XI (1988) 249-58 [Ger].	Chlorotoluron; Isoproturon; Methabenzthiazuron; Phenmedipham.	Soil; Sand: quartz; Water; Standards.	Dissolve evpn. residue of MeOH/HOH extract of soil/sand & of liquids in MeOH (if wet, partition in CH_2Cl_2 & evpn.) to HPLC.	Not specified.	Lichrospher 100 CH-18. MeOH/HOH (7:3). Phenmedipham: MeOH/HOH/CH_2Cl_2/H_2SO_4,1n (550:450:10:5).	0.03-0.05 µg/g soil, 89-96%.	Laboratory simulation of surface drift under field conditions (wind velocity & temperature)
166	Maasfeld,W; Kettrup,A: Vom Wasser, 55 (1980) 121-29 [Ger].	Methabenzthiazuron; Metribuzin.	Water: ground; Water: distilled.	CH_2Cl_2-extract, residue in acetone or MeOH, evpn. residue take-up in MeOH.	[C] HP1084A.	200x4mm, rp Nucleosil 5 C 18, MeOH/HOH (60:40) & 150x4.6mm, 5µm LiChrosorb RP 18, MeOH/HOH (40:60); 1ml/min.	0.1µg/l, Metribuzin:0.5µg/l;	Pesticide behaviour in drinking water processing pilot plant filters (sand & active C), as also on chloration.
167	Maeda,M; Tsuji,A: J.Chromatogr., 120 (1976) 449-55 [Eng].	Benomyl; Thiabendazole; Thiabenzadole metabolites.	Standards; Chestnut; Cucumber; Onion; Orange: peel; Orange: pulp; Peach; Tomato.	Benomyl: EtAc extract + HCl dil., evaporate EtAc; n-hexane clean-up, aq.phase+NaOH, hydrolysate with EtAc; residue in MeOH. 2) Omit hydrolysis	[C] Hitachi 634; [D] Hitachi 204 fluorescence spectrophotometer for detection of benomyl hydrolysate.	500x2.1mm, 20-23µm Hitachi Gel: 1) Benomyl: No.3010, 2) Thiabendazole: Gel-CH_2OH. 1) HAc/MeOH (0.1:99.9), 2) HAc/MeOH (5:95); both 1.2ml/min..	Benomyl:0.02µg/g ; 90.5-102.9%; TBZ:0.001µg/g; 98.2%.	Fluorometer detector application for carbamate pesticides.
168	Makino,K; Sakata,G; Kawamura,Y; Ikai,T: J.Pesticide Sci., 11 (1986) 469-72 [Eng].	Quizalofop-ethyl.	Rice: plants; Standards.	None.	[C] Shimadzu LC-3A.	250x4.6mm, Nucleosil C18, Partisil-5ODS-3. AcCN/HOH (2:5), 1.5ml/min.	Not indicated.	Retention volume as parameter for pesticide effectivity in rice plants.
169	Malissa,Jr.,H; Buchberger,W; Landgraf,E; Winsauer,K: Mikrochim.Acta [Wien], 1984 I, 127-42 [Eng].	Pyridate.	Barley: green plants; Barley: straw; Barley: grain.	Extraction and clean-up by GPC.	Varian: [C] 5020; [D] Varichrom with GC-FTIR quantitation.	250x4.6mm, 10µm Nucleosil-CN. Dioxane/iso-octane (40:60), 1ml/min.	5ng/g.	Fraction separation by HPLC.

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170	Maris,FA; Jong,GJ de; Somsen,GW; Brinkman,UATh; Goewie,CE; Broek,HH van den: Chemosphere, 17 (1988) 1301-08 [Eng].	Pentachlorophenol.	Liver: human; Liver: rabbit; Standards.	H_2SO_4 digestion at 100°C of macerated sample, hexane/toluene (80:20) extract, acidify organic layer for HPLC.	[P] Orlita 034 sRC reciprocating; [I] Valco six-port; [D] Pye UNicam 63Ni ECD.	Chrompack: 250x4.6mm, 10µm Spher Silica or 250x4mm, 5µm LiChrosorb Si-60. Hexane/toluene/Ac glac. (80:20:1) at 1ml/min.	5-10ng/g, 60%.	Simplified sample treatment with 5x lower detection limits compared to GC-ECD.
171	McDermott,WH: JAOAC., 63 (1980) 650-52 [Eng].	Carbaryl; Carbaryl contaminants: 1-naphthol.	Formulations: powder, aqueous.	Solution in IS soln: 2.7ml di-n-butylphthalate in 200ml MeOH/CH_2Cl_2 (5:95).	[C] Glenco Systems I; [I] Valco 2.0; [D] uv at 254.	Stainless steel 250x4.6mm, Whatman Partisil 1025 PAC. Heptane/CH_2Cl_2/isopropanol/MeOH (60:35:4.8:0.2), 1.0ml/min.	Repeatabilty coefficients of variation: 0.606,0.624 & 0.745%.	Mobile phase & extraction optimisation for detcn. of contaminant 1-naphthol in formulation.
172	McEldowney,AM; Menary,RC: J.Chromatogr., 447 (1988) 239-43 [Eng].	Pyrethrum.	Pyrethrum: flower dry; Standards.	Extract dry Pyrethrum flower powder with light petroleum (bp 40-60°). Dilute standard to density 0.78.	Waters: [C] 6000A; [I] U6K; [D] 440 absorbance detector.	Waters: RCSS Guard-Pak; 8mm, 10-µm Rad-Pak cartridge. n-hexane/THF (96:4), 0.7ml/min (21min.) -> 2.3ml/min.	For fraction separation only.	UV-Absorbance of separated ester fractions.
173	Meinard,C; Bruneau,P; Perronet,J: J.Chromatogr., 349 (1985) 109-16 [Eng].	Deltamethrin.	Standards.	Photoisomerization.	[P] Altex 110A; [I] Rheodyne 7125; [D] Tracor 970 A & McPherson 750 Fluorometer.	250x4mm, 5µm LiChrosorb Si-60. Hexane/pentane/MeCN/dioxane/2-propanol (1900:100:45:10:1.5).	Reaction kinetics study only.	Spatial configuration and mechanism of photoisomers determined.
174	Miles,CJ; Delfino,JJ: J.Chromatogr., 299 (1984) 275-80 [Eng].	Aldicarb; Aldicarb metabolites.	Water: ground; Standards.	No sample preparation necessary.	[C] Perkin-Elmer Series 2; [I] Rheodyne 7125; [D] Perkin-Elmer LC75 variable uv at 200nm & 552 uv-vis spectrophotometer.	150x0.4mm 5µm C8 Zorbax. MeCN/HOH (12:88) & (40:60) at 1.0ml/min.	10µg/l.	Applicability study.
175	Miles,CJ; Moye,HA: Chromatographia, 23 (1987) 109-11 [Eng].	Aldicarb; Aldicarb metabolites.	Orange: nectar: Grapefruit: nectar; Standards.	Post column fluorogenic labeling of analyte.	[C] Perkin-Elmer Series4; [I] Perkin-Elmer ISS 100; [D] Kratos FS 970 LC fluorometer.	Cyano- & phenyl-silica, silica, alumina commercial columns examined -> choice: unmodified silica with 1%MeCN in HOH, 0.5ml/min.	Estimated at 0.05mg/l.	Qualitative trial study.

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176	Miles,CJ; Moye,HA: J.Agric.Food Chem., 36 (1988) 486-91 [Eng].	Glyphosat.	Soil: Calvin silt loam; Standards.	KOH (0.2M) extract of spiked sample, derivatized at pH 9 (borate buffer), EtAc or EtOEt extracted for HPLC.	[P] Altex 110A; [I] Rheodyne 7125; [D] Aminco spectrofluorometer detection of derivative.	Alltech 250x4mm NH_2 Column. MeCN/HOH(0.05M KH_2PO_4 pH 6.0) (25:75) at 1.0ml/min.	1µg/g; Sample 1) 119% at pH 4, 2) 108% at pH 10-12.	Quantitation procedure for sorption/desorption & extraction behaviour in different soil types.
177	Miles,JW; Mount,DL; Staiger, MA; Teeters,WR: J.Agric.Food Chem., 27 (1979) 421-25 [Eng].	Fenitrothion; Malathion.	Formulations; Standards.	Fenitrothion powder & Malathion sample+2ml IS soln. (0.2% iso-fenitrothion in $CHCl_3$) dissolved in $CHCl_3$ for HPLC.	Waters: [C] 6000A; [I] U6K loop; [D] Varian Vari-chrom variable uv: Fenitrothion: at 280nm, Malathion at 222nm.	250x4.6mm Whatman Partisil-10 PAC. Cyclohexane/isopropanol (90:10), Fenitrothion: 0.8ml/min., Malathion: 0.4ml/min.	Required detection around 1% S-methyl isomer content feasible.	Degradation due to storage at elevated temperatures (tropical) of water dispersible powders.
178	Mishalanie,EA; Birks,JW: Anal.Chem., 58 (1986) 918-23 [Eng].	Ametryne; Butylate; Dazomet; Diallate; EPTC; Fenchlorphos; Malathion; Methomyl; Parathion; Prometryn.	Standards.	None.	[P] Kratos Spectroflow 400; [I] Rheodyne 7410; [D] Chemiluminescence reaction cell (CL) with photomultiplier tube EMI 9659QB, 650-800nm.	Brownlee microbore 150x1mm, 3µm DuPont Zorbax ODS. 70-85% MeOH or MeCN in HOH, 0,06- 0.1ml/min.	50pg-3ng; Malathion: 62%, others not indicated.	Design & performance of a high selectivity chemiluminescence detector over non-sulfur species.
179	Mittelstaedt,W; Führ,F: J.Agric.Food Chem., 32 (1984) 1151-55 [Eng].	Dinocap (^{14}C labelled); Dinocap metabolites.	Soil: standards; Standards.	CH_2Cl_2 extract, TLC fractionation, purify fractions by HPLC, liquid scintillation counting.	Waters:[C] 660 solvent programmer; [P] 6000A; [I] U6K; [D] 440 uv at 254 & 280nm & Packard 460C for LSC.	250x4mm, Merck 10µm RP18 Lichrosorb. MeCN/HOH/HAc/2-propanol (70:30:0.2:1) at 2.2ml/min	40ng in standard soil Nos.2.2 & 2.3 from Federal Biological Research Centre, Germany.	Metabolite accumulation in soil (max. 2% of applied).
180	Mittelstaedt,W; Still,GG; Dürbeck,H; Führ,F: J.Agric.Food Chem., 25 (1977) 908-12 [Eng].	Methabenzthiazuron; Methabenzthiazuron metabolites.	Soil; Standards.	$CHCl_3$ soln. of extract residue, to 400x20mm, 0.063-0.2mm Merck silica gel 60, CCl_4/MeCN (100:3) eluate (pesticide), MeCN eluate (metabolite).	Waters: [C] 660; [P] M6000-A; [D] 440 fixed uv at 254 with MS confirmation: MAT CH 7 & Spectrosystem 100.	Waters: 1) 300x4mm, 100A µ-Styragel, $CHCl_3$, 2ml/min., 2) rp µ-Bondapack C18. MeCN in HOH: 5 -> 100% over 15min.& 20-100% over 20min. 3) µ-Porasil, 1.5ml/min.	HPLC for purification of metabolite fractions, structural confirmation by MS.	Repeated chromatographic purification of major metabolite & MS quantitation.
181	Miyazaki,A; Nakamur,T; Kawaradani,M; Marumo,S: J.Agric.Food Chem., 36 (1988) 835-37 [Eng].	Acephate; Methamidophos.	Standards: racemic.	Synthesis of enantiomers.	[C] Shimadzu LC-3A.	250x4.6mm CHIRALCEL OC. Hexane/propan-2-ol (4:1) at 1.0ml/min.	Not specified.	(-) Enantiomers posses higher insecticidal activity.

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182	Morris,KR; Abramowitz; Pinal,R; Davis,P; Yalkowsky,SH: Chemosphere, 17 (1988) 285-98 [Eng].	Atrazine; Diuron.	Standards.	Sample + cosolvent-water mixtures, equilibrate 18-48h, centrifuge, evpn. of aliquots, MeCN/HOH soln. for HPLC analysis	[P] Beckmann 110B; [D] uv at 254nm.	1) Alltech C18, 5µm; 2) 250x4.6mm, C8. MeCN/HOH (70:30), 1.0ml/min.	Not indicated	Solubility in industrial effluents of environmental pollutants (org. mixed solvents) with modelling.
183	Mourot,D; Delépine,B; Boisseau,J; Gayot,G: J.Chromatogr., 173 (1979) 412-14 [Eng].	Deltamethrin	Formulations.	None.	[C] Varian LC8500; [D] variable uv	100x4.7mm, 10µm LiChrosorb RP-8. n-Hexane/diisopropylether (93:7) 1.17ml/min. & 150x4.7mm, 5µm LiChrosorb Si-60. MeCN/1%H_2SO_4 (70:30), 1.33 ml/min.	Retention times only.	Chromatographic optimisation for quantitation of deltamethrin formulations.
184	Moye,HA; Scherer,SJ; St.John,PA: Anal.Letters, 10 (1977) 1049-73 [Eng].	Aldicarb; Aminocarb; Carbaryl; Carbofuran; Propoxur; Mercaptodimethur; Methomyl.	Standards.	Post-column fluorogenic labelling reaction of pesticide hydrolysates with o-phthalaldehyde.	[C] Waters 6000 & Milton Roy 196 piston pump; [I] Chromatronix HPSV [D] American Instr. 125S fluorometer with cell B16-63019 & Hg-Xe 416-993.	RP columns: Waters 300x4mm µC18 (ODS) & Altex stainless steel 250x4mm with 5µm Lichrosorb. Dioxane in HOH 15 -> 40%, 20min. at 1ml/min.	0.1ng; resolution on different columns given.	Qualitative definition of equipment & conditions for analyxtical application.
185	Moye,HA; Wade,TE: Anal. Letters, 9 (1976) 891-920 [Eng].	Aldicarb; Aminocarb; Carbaryl; Carbofuran; Carbofuran metabolites; Chlorpyrifos; Fonofos; Mercaptodimethur; Mexacarbate; Parathion; Parathion-methyl; Propoxur.	Standards.	Inhibition of cholinesterase reaction with fluorophore N-methylindoxyl acetate by the pesticide.	[I] Chromatronix 2µl;[D] American Instr. 4-8202 for baseline fluorescence reduction due to pesticide in fluorophore-enzyme reaction.	Glass 3mm of varying length, ODS Permaphase. MeOH/HOH (10:90).	0.2-50ng, 800ng (Fonofos).	Fluorescence detection due to enzyme inhibition activity of pesticide.
186	Moye,HA; Wheaton,TA: J.Agric.Food Chem., 27 (1979) 291-94 [Eng].	Naphthalene acetic acid.	Orange: fruit, peel oil, molasses; Tangerine: fruit, product.	Fruit + H_2SO_4/CH_2Cl_2, wash, extract 0.01N H_2SO_4, evpn., EtOEt soln. extract in 0.2M K_2HPO_4, acidify, extract in $CHCl_3$, evpn., HOH soln. for HPLC.	[C] Waters 6000; [P] Milton-Roy 196-0042-028; [D] American Instrm.4-8202, with flow-cell as fluorescence monitor.	Dupont 500x2mm ETH: 0.1M Citrate (pH 4.3). 1.3ml/min. Waters 250x4mm µ Bondapak CN: 0.1M phosphate buffer(pH 7.0), 1.0ml/min.	Only molasses: 0.008µg/g; fruits and processed products free of pesticide residue.	Fluorometer measurement uses single piston pump as no pulse-free flow needed.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
187	Muir,DCG; Rawn,GP; Grift,NP: J. Agric.Food Chem., 33 (1985) 603-09 [Eng].	Deltamethrin (^{14}C-labelled); Deltamethrin, hydrolysates.	Water: pond; Air; Sediment: pond; Solids: pondwater; Duckweed; Pondweed; Algae; Spirogyra sp; Fish; Pimephales promelas; Standards.	Water & air samples (polyurethane foam): $CHCl_3$/HOH (1:1) extract; Acetone/hexane (1:1) extract: solids, vegetation; (8:2): fish. Sediment: Sep-Pak C18.	[D] uv at 254; liquid scintillation counting; others not specified.	Waters 300x4.6mm µBondapak C18. MeOH/$CHCl_3$/HOH/HCHO (42:2.5:5.0:0.5).	Water: 0.01µg/l; vegetation & fish: 10ng/g; sediment: 1ng/g.	Field behaviour & mass balance between controlled pond components by total environment monitoring studied.
188	Nagayama,T; Maki,T; Kan,K; Ilda,M; Nishima,T: JAOAC, 70 (1987) 1008-011 [Eng].	Diquat; Paraquat.	Cabbage; Corn; Peach; Potato; Rice; Wheat.	Extract in HCl (hot,dil.), filter + NH_4OH & with 0.1M acetate buffer pH 8, precolumn clean-up, elute 0.1N HCl/MeOH, residue in MeCN/HOH/MeOH (2:1:1).	[C] Shimadzu LC-5A; [I] Rheodyne 7125; [D] Japan Spectroscopic UVIDEC-100-III variable uv.	Precolumn: glass 300x1mm, Rohm & Haas Amberlite CG-50 type 1; stainless steel 250x4.0mm, 5µm Cica-Merck Hibar LiChrosorb NH_2. MeCN/MeOH/HOH+2.92g NaCl (750:100:150).	0.5ng (≡0.02µg/g). Diquat: 79-98%; Paraquat: 80-103% .	Procedure for quantitation of residues in agricultural products.
189	Nagayoshi,E: J.Pesticide Sci., 2 (1977) 445-48 [Eng].	Naproanilide; Naproanilide metabolites.	Rice: grain, straw.	Hexane-extract + MeCN + HOH (pH >7), MeCN-soln.+ ether, Florisil/silica gel(straw) column clean-up, eluate in hexane/ether/HAc (100:100:0.5) for HPLC.	[C] not specified; [D] Fluorophotometer 280nm/340nm.	Glass 500x3mm, Hitachi gel #3010. MeOH at 1.5ml/min.	Grain: 0.004mg/kg; straw: 0.008mg/kg. 74-99% .	Development of analytical procedure.
190	Nair,J; Munir,KM; Bhide,SV: J.Liq.Chromatogr., 6 (1983) 2829-37 [Eng].	HCH; HCH metabolites.	Liver: mouse.	Acid & alkaline hydrolyis, distillation, toluene extract, evpn., benzene soln. clean-up Sephadex QAE Q-25-120, residue in mobile phase.	[C] Waters 6000A; [I] U6K; [D] 440 uv at 254nm.	300x2.9mm rp µBondapak C18. MeOH/buffer (0.5mM pH 7.2), 0.8ml/min. Buffer:50mM each of K_2HPO_4 & KH_2PO_4.	4-45ng.	Major metabolite from mice liver fed on HCH is 2,6-dichlorophenol.
191	Narang,AS; Eadon,G: Internat.J.Environ.Anal. Chem., 11 (1982) 167-74 [Eng].	Aldicarb; Aldicarb metabolites.	Water: well; Standards.	Water (& solns.) extracted on Amberlite XAD-2, acetone eluate concn.,dilute with MeCN.	Waters: [C] ALC/GPC-244 with 6000A solvent delivery; [I] U6K; [D] 440 uv at 254nm	300x3.9mm µ-Bondapack C18 rp. MeCN/HOH (60:40) at 1.5ml/min.	Metabolites: sulfoxide 2.4-23.1 µg/l, total: 9-20µg/l.	No solvents needed as in conventional liq.-liq. extraction.

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192	Nehring,G von; Hightower,JW; Anderson,JL: Anal.Chem., 58 (1986) 2777-81 [Eng].	Chlorbromuron; Chlorotoluron; Difenoxuron; Diuron; Fluometuron; Linuron; Metobromuron; Metoxuron; Monolinuron; Monuron; Neburon; Siduron.	Standards.	None.	[P] Altex 110A; [I] Valco [D] BAS-CV-1B.	HPLC Technology 250x4.6mm, 5µm Hypersil SAS. Buffer/MeOH (1:1), (buffer:01M Na_2HPO_4,.015M KH_2PO_4,.01M NaOAc.	60-410 g/l;1-8ng.	Application of electrochemical detection to urea pesticides in water.
193	Nelsen,TR; Cook,RF: J.Agric.Food Chem., 27 (1979) 1186-88 [Eng].	Carbofuran.	Soil; Water: soil leachate; Standards	MeOH/HOH (2:1)-soln.(from soil)/water, extract with CH_2Cl_2, hydrolyse, aq.phase clean-up $CHCl_3$, + HCl, extract in $CHCl_3$, residue in MeCN.	[C] Waters ALC 202.	300mm C18 µ Bondapak. MeCN/HOH (42:58) at 2ml/min.	As 7-hydroxybenzofuran: 0.05µg/g, 70-97%.	Recovery uniform for all soil type & spiking level when MeCN soln.(unstable) quantitated immediately.
194	Newsome,WH; Panopio,LG: J.Agric.Food Chem., 26 (1978) 638-40 [Eng].	Zineb; Zineb metabolites.	Apple; Grape; Lettuce; Tomato; Standards.	Filter 0.1M HCl-extract, ion-exchange, 0.5ml/min., 3.0M NaCl-eluate derivatize (p-nitrobenzoyl.Cl), on silicagel, wash, elute with CH_2Cl_2.	[P] Aerograph 4000; [I] Valco 50µl; [D] Isco UA-5 254nm uv absorbance monitor.	500x2.2mm Aerograph Micro Pak Si-10. Isopropylalcohol/CH_2Cl_2 (1.6:98.4), 0.5ml/min.	0.02mg/kg Apple:87.3%, Grape 101%.	Zineb & metabolites do not interfere in 2-imidazoline determination.
195	Niemczyk,HD; Chapman,RA: J. Econ. Entomol., 80 (1987) 880-82 [Eng].	Isofenphos.	Turfgrass; Thatch; Soil: golfcourse.	Soil or thatch + HOH, disperse, spike, incubate in buffered nutrient soln., supernatant for HPLC.	Not identified.	250x4.6mm, 5µm Spherisorb ODS reverse phase.MeCN/HOH (60:40), 2ml/min.	0.05mg/kg.	Microorganismal adaptation reduces residue effectivity against summer larvae.
196	Nieuwkerk,HJ; Das,HA; Brinkman,UATh; Frei,RW: Chromatographia, 19 (1984) 137-44 [Eng].	Carbaryl, ^{14}C-labelled; Parathion, ^{14}C-labelled.	Standards; Water: canal.	Hexane extract, on silica, CH_2Cl_2 eluate, residue in MeCN/HOH, (30:70).	Perkin-Elmer: [P] dual-head 3B; [I] Rheodyne 7126; [D] Kontron Uvikon 725uv; β-detector.	10cm Brownlee column. β-reference counting segment separation loops MeCN/HOH (30:70).	60% in the clean-up of canal water.	Pharmacokinetics & metabolism studied with on-line radiometric detection of radiolabelled pesticide.
197	Norman,SM; Fouse,DC: JAOAC., 61 (1978) 1469-74 [Eng].	Imazalil.	Grapefruit; Orange.	EtAc extraction, partition in 0.05N H_2SO_4, back to EtAc, residue in mobile phase.	[P] Waters 6000A; [I] Rheodyne 7120; [D] Varian Vari-Chrome variable uv.	Stainless steel 250x3.2mm, Altex 10µm LiChrosorb. MeCN/0.002M NaCl in phosphate buffer pH7.5 (47:53), 1.3ml/Min.	0.46- 6.05 mg/kg; 84%, after 4 weeks storage: 80%.	Peeling contaminates fruit; concentration levels detected are higher than GLC.

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198	Oehmichen,U; Haberer,K: Gewaesserschutz, Wasser, Abwasser, 88 (1986) 216-27 [Ger].	Atrazine; Prometryn; Propazine; Simazine.	Standards; Water: river.	Enrichment of Rhine water (not specified).	Not indicated.	100x2.1mm, Hypersil ODS C-18 MeOH in HOH 37 -> 60% gradient, 0.6ml/min.	1µg/l.	Simultaneous GC control analysis; applicability for routine monitoring according to legal regulations studied.
199	Olek,M; Blanchard,F; Sudraud,G: J.Chromatogr., 325 (1985) 239-47 [Fr].	Carbaryl; Carbofuran; Ethlofencarb; Mercaptodimethur; Promecarb; Propoxur.	Standards; Potato; Lettuce.	Macerate in acetone, CH_2Cl_2 extract, purify on a Florisil column.	[P] Gynkotek 600; [D] Electrochem. Chromatofield Eldec 102 detected as hydrolysate phenols.	10x4.6mm, 5µm Nucleosil C18. MeOH/HAc/HOH (49.5:0.5:50), 1.3ml/min.	0.5-2.0ng; potatoes: 75-95%, lettuce: 80-88% (variation with spike concn.	Electrochemical detection with limiting factors (electrode contamination) given.
200	Opelanio,LR; Rack,EP; Blotcky,AJ; Crow,FW: Anal.Chem., 55 (1983) 677-81 [Eng].	DDA p,p'-; DDD p,p'-; DDE p,p'-; DDT.	Urine.	Hexane (+2% HAc glac.) extract, residue in mobile phase.	[C] ISCO 1440; [P] 314; [D] UA-5 uv at 254nm for fraction separation only; detection by MS & neutron activation analysis.	Guard: 70x2.1mm Whatman 25-37µm Co:Pell ODS; 250x6.35mm 1) Partisil-5 ODS & 2) Partisil 10/C. MeOH/HOH/HAc.glac. (60:20:20), 1ml/min.	0.001-0.35ng/ml (MS), 0.01-2ng/ml (NAA); 80-94%.	Procedure for fraction separation with off-line MS analysis.
201	Osselton,MD; Snelling,RD: J.Chromatogr., 368 (1986) 265-71 [Eng].	Asulam; Captan; Chlordane; 2,4-D; Dalapon; Dicamba; Diquat; Glyphosat; Paraquat; Permethrin; Pirimicarb; 2,4,5-T; Trichlorfon.	Standards.	None.	[P] Beckmann 110A, [I] Rheodyne 7125; [D] Hewlett Packard HP 1040A rapid scanning photodiode-array spectrophotometer	Stainless steel 160x5mm, 5µm ODS Hypersil; MeCN/HOH (60:40), 2ml/min. 250x5mm, Spherisorb S5W; CH_2Cl_2/Isooctane (60:40), 2ml/min.	Capacity factors only are given.	Uniform procedure (parallel to GC and TLC) established for use by forensic toxicological laboratories of UK.
202	Osterloh,J; Lotti,M; Pond,SM: J.Anal.Toxicol., 7 (1983) 125-29 [Eng].	2,4-D; Mecoprop.	Bile; Blood; Brain; Diaphragm; Heart ventricle; Kidney; Liver; Pancreas; Plasma; Stomach contents; Urine.	Homogenize with 100mM NaHCO3 buffer, dilute with MeCN/MeOH (2:1), add IS (Dichlorprop), to HPLC.	Perkin-Elmer: [C] Series II pump + LC-100 oven; [D] LC-75 variable uv.	Altex 250x4.6mm Ultrasphere ODS rp column. MeCN/MeOH/phosphate buffer pH6.8 (14:10:76) at 1.7ml/min.	1µg/ml; 89-102%	Ingested pesticide monitoring (simultaneously by GC) for toxicological & other neurotoxic esterase detection.
203	Otsuki,A; Tekaku,T: Anal.Chem., 51 (1979) 833-35 [Eng].	Temephos.	Water: pond; Standards.	Standard dissolved in MeCN.	Waters: [C] ALC 204; [P] 6000A; [S] 660; [I] U6K; [D] 440.	1220x2mm, 37-50µm Bondapak Phenyl/Corasil. MeCN/HOH (0-100%)	Recovery 100% when 6-8mM lauryl sulfate is added.	Establishment of parameters for applicability to pond water.

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204	Ott,DE: JAOAC., 61 (1978) 1465-68 [Eng].	Phenylphenol o-.	Orange: peel; Standards.	CH_2Cl_2 extraction, concentrate on Florisil column, CH_2Cl_2 elute, residue in EtOH for HPLC.	[P] Waters M-6000A; [I] Valco CV-6-UHPa; [D] Altex 151 uv dual nm & Bioanalyt.Sys. LC-10 amperometric	Stainless steel 500x1.8mm, Waters 37-50µm Bondapak C18, Corasil. EtOH/HOH (40:60) at 1.1ml/min.	<1mg/kg. 80%.	Amperometric detector in series with uv applicable to oxidizable pesticides.
205	Pacakova,V; Stulik,K; Prihoda,M: J.Chromatogr., 442 (1988) 147-55 [Eng].	Ametryne; Atraton; Atrazine; Atrazine metabolites; Desmetryn; Ipazine; Prometryn; Propazine; Propazine metabolites; Simazine; Simazine metabolites; Simeton; Simetryne; Terbuthylazine; Terbutryne; Trietazine.	Standards.	Pesticide soln. photolyse 1-120min. (Tesla RVL-X 250 lamp, max. emission at 250nm) dilute with MeOH , analyze.	LKB,Sweden: [P] 2150; [D] 2151 variable uv; [I] Rheodyne 7125; [D] Laboratorni, Pristroje amperometric cell.	Glass 150x4.5mm 18.5-µm Separon SIC. MeOH/0.01M NaH_2PO_4 (40:60) at 0.3ml/min.	0.05-0.1µg/g.	Photolytic degradation of pesticides as function of pH and subtituents studied.
206	Papadopoulou-Mourkidou,E; Iwata,Y; Gunther,FA: J.Liq.Chromatogr., 4 (1981) 1663-76 [Eng].	Aldicarb; Carbaryl.	Formulations; Standards.	Aldicarb: CH_2Cl_2-extract + Carbofuran IS; Carbaryl: powder extract in MeCN/$CHCl_3$ (10:90), liquid suspension in $CHCl_3$.	Waters:[C] 660 solvent programmer, [P] 6000A; [I] Rheodyne 7125; [D] Foxboro Wilks Miran-1A variable IR photmeter.	Guard: 50x4.6mm Whatman HC Pellosil; 250x4.6mm Whatman 10µm Partisil. MeCN/CH_2Cl_2/heptane: (15:30:55) for Carbaryl, (20:40:40) for Aldicarb; 1.5ml/min.	Not specified.	Analysis of concentrated plant extracts with minimal clean-up using IR detection.
207	Parker,CE; Geeson,AV; Games,DE; Ramsey,ED; Abusteit,EO; Corbin,FT; Tomer,KB: J.Chromatogr., 438 (1988) 359-67 [Eng].	Metribuzin; Metribuzin metabolites.	Soybean: plant; Standards.	Extraction.	[P] Waters 6000A; [D] Finnigan/MAT 4500 mass spectrometer over interface MAT TSP LC/MS .	250x4.6mm. 5-µm DuPont Zorbax. MeOH/HOH with 0.05M NH_4Ac: (60:40) at 1.2ml/min. for metabolites;	Metribuzin:0.3µg/g;DK:0.5µg/g; DADK: 18µg/g; DA: 0.5µg/g coincident with ^{14}C accumulation results.	TSP interface for LC-MS applied to metabolites (predominant non-phytotoxic) in soybean plants.

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208	Paschal,D; Bicknell,R; Dresbach,D: Anal.Chem., 49 (1977) 1551-54 [Eng].	Atrazine; Azinphos-ethyl; Alachlor; Carbaryl; Carbofuran, Chloramben. Chlorpyrifos; Dialifos; Diazinon; Fonofos; Fenitrothion; Methoxychlor; Parathion; Parathion-methyl; Phosmet; Phorate; Propachlor; 2,4,5-T; Trifluralin.	Water: run-off; Standards.	Preconcentration: Rohm & Haas XAD-2 resin 100mm column, EtOEt soln. of adorbate, residue take-up in MeCN for HPLC.	[P] Spectra Physics 740 B; [I] Glenco 7000 PSI; [D] Perkin Elmer LC 55.	Whatman prepacked: Partisil ODS 250x4.6mm. MeCN/HOH (50:50), 2.4ml/min.	2.9 -3.1ng/g; calibration standards 10-120µg/mg; 98-101%.	Pesticide detection not interfered by 100 to 1000-fold concentration of organics.
209	Paschal,D; Bicknell,R; Siebenmann,K: J.Environ.Sci.Health, B13 (1978) 105-15 [Eng].	Atrazine.	Water: run-off.	Preconcentraion: 100mm column, Rohm & Haas XAD-2 macroreticular resin of 100ml portions 4 l samples; ether extraction, soln.in MeCN.	[P] Spectra-Physics 740 B; [I] Glenco 7000 PSI; [D] Perkin-Elmer LC 55.	Whatman Partisil 10 ODS. MeCN/HOH (50:50), 2.4ml/min.	2µg/mg; 99.5%.	Interference by Carbaryl, Monuron, Simazine & Propazine avoided by (40:60) MeCN/HOH at 1.20 ml/min.
210	Patil,SG; Nicholls,PH; Chamberlain,K; Briggs,GG; Bromilow,RH: Pestic.Sci., 22 (1988) 333-42 [Eng].	Flutriafol; Triadimefon.	Flutriafol: techn.; Triadimefon: techn.	MeOH extract from soil for HPLC.	Not specified.	Guard: 4x4mm; stainless steel 20x5mmm, 7µm Lichrosorb ODS. MeOH/HOH (60:40).	50µg/g soil spikes; >90%.	Fungicide degradation due to temperature and moisture content.
211	Patumi,M; Maruccchini,C; Businelli,M; Vischetti,C: Pestic.Sci., 21 (1987) 193-201 [Eng].	Fluazifop-butyl; Fluazifop-butyl metabolites.	Soil; Standards.	Pesticide: CH_2Cl_2 extract of air-dried soil centrifuged. Hydrolysate: 0.1M NaOH-extract centrifuged & filtered.	Perkin-Elmer: [C] Ser.3; [D] LC-55B variable uv.	1) Erba 150x4.6mm C18 rp. $CHCl_3$/hexane (1:9), 1.0ml/min. 2) Fluazifop: Perkin-Elmer 250x2.6mm silica B:5 rp. MeOH/HOH/HAc (55:44:1), 0.7ml/min.	0.05mg/kg. 84-101%.	Hydrolysate determination without derivatization more sensitive and specific by GC-MS.
212	Petrick,G; Schulz,DE; Duinker,JC: J. Chromatogr., 435 (1988) 241-48 [Eng].	Aldrin; TDE; DDE p,p'-; DDT p,p'-; Dieldrin; HCH alpha-; HCH gamma-; Heptachlor; Heptachlor metabolites; Mirex.	Air: particles; Mussel: mediterranean; Penguin: antartic; Sediment: mediterranean.	n-Hexane extract, clean-up on alumina column 40x5mm, concentrate to HPLC.	[P] Constametric; [I] Rheodyne; [D] Carlo Erba 4130 GC-ECD, 2100 with flame ionization detector for fractions from HPLC.	Stainless steel 200x4mm, Macherey-Nagel Nucleosil 100-5. Successive eluates: n-pentane, n-pentane/CH_2Cl_2 (80:20), CH_2Cl_2, 0.5ml/min.	30ng per component; 95-100%.	Selective isolation with mobile phase set avoids masking by PAH & saves solvent and time.

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213	Peña-Heras,A; Sanchez-Rasero,F: J.Liq.Chromatogr., 5 (1982) 327-35 [Eng].	Chlorpropham.	Standards; Formulations: emulsifiable concentrate.	None.	[C] Hewlett-Packard 1084 B.	RP-8. MeOH/HOH (60:40), 2ml/min.	3.9ng.	Establishment of conditions of the procedure.
214	Peña-Heras,A; Sanchez-Rasero,F: Pesticides, 19 (1985) 63-65 [Eng].	Sulfallate.	Standards; Formulations: Vegadex.	Dissolution.	[C] Hewlett-Packard 1084 B.	H-P 79910A stainless steel 200x4.6mm, 10µm LiChrosorb RP-8. MeCN/HOH (48:52), 2.2ml/min.	0.8 - 25µg.	Parameters of analytical application studied.
215	Peña-Heras,A; Sanchez-Rasero,F: Quim.Anal., 5 (1986) 203-09 [Span].	Karbutilate.	Formulations; Standards: reference.	None.	As used in CIPAC Proc.3: p.15-31, Pesticide Formulation Analux,Belgium, Heffers Printers,Cambridge (1981).	Mobile phase: MeCN/HOH (45:55); 1.2ml/min.	1.2ng	Applicabilty of reverse-phase HPLC to Karbutilate studied.
216	Pick,FE; Beer,PR de; Prinsloo,SM; Dyk,LP van: Pestic.Sci., 21 (1987) 45-49 [Eng].	MSMA.	Formulations: Farmers, Mesamate, Daconate, Target; Standards.	Standard solutions diluted to 10µg/ml As.	[C] Hewlett Packard 1082B; [D] Graphite Furnace AAS Varian 475.	Waters 100x8mm, Biorad Aminex A-27. 100 -> 0% HOH in 0.2M aq.$(NH_4)_2.CO_3$ during 9-20min.-28min/inverse -> 0% in 2min.)	Nominal concns. (not specified). Detmn. of contaminants.	Possible arsenical contaminants in MSMA: Cacodylic acid, disodium arsenite, & Na-arsenate.
217	Pribyl,J; Herzel,F: J.Chromatogr., 125 (1976) 487-94 [Ger].	Buturon; Chloroxuron; Cycluron; 3,4-Dichloraniline; Diuron; Linuron; Methabenzthiazuron; Metobromuron; Monolinuron; Monuron; Neburon.	Standards; Urea.	None.	[C] Varian 8500; [D] Spectrophotometer 650.	Steel 250x2mm; glass in steel 250x3mm. 10µm Mikropak CN & LiChrosorb;40 µm Bio-Beads SX-12 & Perisorb-A: 20um Polyamide. CH_2Cl_2/hexane/EtOH (79:20:1), 20ml/min.	Diuron: 1µg; Methabenzthiazuron: 1.5 µg; Metobromuron: 0.5µg; Monuron: 1 µg; Fenuron: 1.5 µg.	Separation characteristics for different column packings.
218	Pribyl,J; Herzel,F: J.Chromatogr.. 153 (1978) 399-08 [Ger].	2,4-D; Dichlorprop; Fenoprop; Mecoprop; MCPA; 2,4,5-T; MCPB; 2,4-D contaminants: 2,4,5-trichlorophenol.	Standards.	None.	[C] Varian LC 8500; [D] Spectrophotometer 635.	Steel 500x3.5mm; Perisorb RP-2, 30-40µm. MeOH/HOH/Et_4NBr (5-15:95-85:30-60 mM), 0.2ml/Min.	10ng.	Selection of optimal mixtures and parameters of mobile phase.

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219	Prince,JL: J.Agric.Food Chem., 33 (1985) 93-94 [Eng].	Ethylenebisdithiocarbamate metabolites.	Urine.	10g. urine + 10g. Gas-Chrom S + 50ml 4% EtOH in $CHCl_3$ (eluant), slurry on 4g. alumina column; elute 3x50ml, residue in mobile phase.	[C] Hewlett Packard 1080 HPLC; [D] Astra ED 110 electrochemical.	Du Pont Zorbax ODS 250x4mm. (0.2ml MeCN+0.2ml HAc+3.28g NaAc]+HOH to 1l, 1ml/min.	0.025µg/ml from 10g urine, 88-94% .	Electrochemical detector for lower detection limit (former 0.05µg/l) without S-butyl derivatization.
220	Prince,JL; Guinivan,RA: J.Agric.Food Chem., 36 (1988) 63-69 [Eng].	Chlorimuron-ethyl.	Corn: kernels; Potato; Soybean; Turnip; Wheat.	Extract 1) Soybean: CH_2Cl_2,+ HOH, evpn., hexane wash, CH_2Cl_2 extract; 2) wheat & corn: EtAc; 3) Turnip & potato: basic aq.buffer; all clean-up on Si-cartridge.	[C] Du Pont 8800; [I] Rheodyne [D] Tracor 965 photoconductivity	EM Lab 310x25mm, 40-63µm LiChroprep Si60; EtAc/MeOH (60:40), 8ml/min. DuPont 250x4.6mm, Zorbax SIL/Waters 300x3.9mm µ-Porasil; benzene/propanol/MeOH(+ 2ml HAc/l) (75:12.5:12.5), 1ml/min.	0.01mg/kg, 90%.	Selective detection for S, halogens, N, & P by conductivity difference between uv-exposed & non-exposed HPLC column eluate.
221	Pryde,A; Schuler,A; Mühll,FPA vonder: Anal.Chim.Acta, 111 (1979) 193-99 [Eng].	Ro 10-3362.	Cotton: plants; Wheat: plants.	MeCN extraction and Sephadex QAE A25 clean-up, ion-pair partition on tetra-butyl-ammoniumhydroxide	[C] Orlita DMP AE-10-4; [I] 10A-RN-GP, SGE; [D] Perkin-Elmer LC55 variable uv at 310nm.	Stainless steel 100x5mm 5µm rp SAS-Hypersil. MeOH/HOH/phosphate buffer(pH 7.5) (40:60:0.38), 1.0ml/min.	9.4ng; Wheat 96,5%; cotton 104.4%	Recovery confirmed by comparative 14-C labelled scintillation counting of elutes.
222	Putzien,J: Vom Wasser, 68 (1987) 33-41 [Ger].	Benodanil; Bentazone; Bromacil; Chlorflurenol; Ethidimuron; Hexazinone; Napropamide; Thiazafluron.	Water: drinking; Standards.	1l. water sample over commercial Octadecyl- and Silicagel (each 500mg) columns, HOH/MeOH elution in fractions.	Not specified: [P]; [I]; [D] variable uv & Fluorescence.	100x8mm, 10µm Octadecyl silicagel C18. MeOH/HOH (7:3) at 1.2ml/min.	200-500ng/l except Chlorflurenol: no signal evaluable.	Levels of pesticide detected in groundwater not contaminated with org. chemicals higher than legal limits.
223	Putzien,J: Z. Wasser- Abwasser-Forsch., 19 (1986) 228-36 [Ger].	Asulam; Benodanil; Bentazone; Bromacil; Chlorflurenol; Dinoterb-acetat; Ethidimuron; Hexazinone; Napropamide; Oxycarboxin; Picloram; Thiazafluron.	Standards; Water: pure; Water: tap; Water: ground.	Silicagel & C18 column (each 500mg) enrichment, wash out HOH/MeOH (8:2) in 10ml elution fractions .	Not indicated.	100x8mm, 10µm C 18. MeOH/HOH (7:3) & (8:2).	10ng for standards; 500ng/l sample.	Detection limits for monitoring of drinking water higher than german water regulations.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
224	Reeder,SK: JAOAC., 58 (1975) 1013-14 [Eng].	Biphenyl.	Oil: citrus; Standards.	Oils: direct injection; juices: heptane extract centrifuged, for HPLC.	[C] Waters M6000; [I] Valco CV-6-HPax; [D] LDC uv monitor at 254.	Stainless steel 914.4x2mm, 20µm LiChrosorb SI-60. Heptane at 1ml/min.	<1mg/kg; 99-101%	Rapid analysis with relative long column life.
225	Rice,LG: J.Chromatogr., 317 (1984) 523-26 [Eng].	Amitraz; Chlorpyrifos; Coumaphos; Crotoxyphos; Phosmet; Permethrin.	Standards; Solution: dip vat.	Dilution and centrifugation.	[P] Waters M6000; [I] Perkin-Elmer 420B Autosampler; [D] Waters 440.	Waters Radial Pak 1) 100x5.0 mm, 5µm; 2) 30x4.6 mm ,3µm. MeCN/HOH (85:15), 2ml/min.	Permethrin 400 pg; Phosmet 80pg.	Effectivity of short HPLC columns studied
226	Rivera,J; Ventura,J; Caixach,J; Torres,Mde; Figuera,A; Guardiola,J: Internat.J.Environ.Anal.Chem., 29 (1987) 15-35 [Eng].	Aldrin; Atrazine; DDT; DDE p,p'-; HCH alpha-; HCH beta-; Heptachlor; Lindane; Simazine; TDE; Trifluralin.	Water: river; Residues: active C-filters desorbate.	Extract active C-filters (waterworks) in CH_2Cl_2 Soxhlet, EtOEt insoluble residue, take-up in MeOH, fractionate by HPLC.	[P] LKB-2150 Dual pump gradient; [D] LKB-2140 uv diode array monitoring; analysis by MS-FAB.	Waters 300x7.8mm µBondapak C18 (semipreparative); Merck 250x4mm LiChrosorb RP18. 10% aq. MeOH in MeCN (10 -> 95%, 45min.)	0.5-20pg/g monthly average pesticide concn.	Study for organic micropollutants in river water with HPLC fractions, analysed by MS-FAB.
227	Roberts,TR; Standen,ME: Pestic.Sci., 8 (1977) 305-19 [Eng].	Cypermethrin.	Soil.	Degradation products sepn. by TLC, fractionate by HPLC for radiocounting.	[P] DCL micropump; [D] Cecil CE 212 uv & ICN Tracerlab Coruflow scintillation counter.	Stainless steel, 5µm Partisil-5: 1) 200x4.5mm, petroleum spirit (+0.1% HAc)/dioxan or EtOH: (99:1) or (95:5), at 1.6ml/min.; 2) 100x4.5mm, CH_2Cl_2/petroleum spirit (20:80).	No HPLC detection.	Aerobic & anaerobic degradation in different soils.
228	Roseboom,H; Wammes,JIJ; Wegman,RCC: Anal.Chim.Acta, 132 (1981) 196-99 [Eng].	Dinoseb; Dinoterb; DNOC.	Apple; Bean; Carrot; Cauliflower; Leek; Potato; Sand; Spinach; Sprout; Wheat.	CH_2Cl_2 extract: crop: maceration for 2min; cereals: shake for 30 min.; clear soln. evaporated, residue in 1ml 0.1M K2CO3/MeOH (1:1) for HPLC.	Waters: [C] 6000A; [I] U6K; [D] 440 uv at 365 or 405nm with ion-pairing agent hexadecyltrimethylammonium Br (Cetrimide).	Chrompack stainless steel 150x4.6mm, LiChrosorb 5RP 18. MeOH/HOH(+ 0.18 wt% cetrimide + 0.006M phosphate), (75:25) at 1ml/min.	0.005-0.01mg/kg; 70-105%.	Effectivity of cetrimide as ion pairing agent studied.
229	Rossum,B van; Martijn,A; Reijke,AA de; Zeeman,J: JAOAC., 66 (1983) 312-16 [Eng].	Diflubenzuron.	Formulations: preconcentrate, powder.	1,4-dioxane soln. for HPLC. IS soln.: 25mg Linuron in 100ml MeCN.	Collaborative study, [C] with constant flow pump & 20µl loop; [D] UV spectrophotometer or fixed uv detector at 254nm.	Stainless steel 250x4.6mm, DuPont Zorbax BP-C8 or equivalent. MeCN/HOH/dioxane (45:45:10), 1.3ml/min.	Within laboratory repeatability 0.6%, reproducibility 1.2%	Collaborative study between 17 laboratories for official first action method.

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230	Rothman,AM: JAOAC., 69 (1986) 714-20 [Engl.	Dicofol.	Formulations.	Dissolucion in MeOH soln.	Collaborative study: [P] pulseless constant flow; [I] 15µl loop; [D] uv at 254 or spectrophotometer.	Stainless steel: guard 50x4.6mm, 10µm Merck LiChrosorb RP-18; analytical: 250x4.6mm 6µm DuPont Zorbax C8. MeOH/HOH/HAc (75:25:0.2).	Statistical analysis in a collaborative study presented.	Active ingredient quantitation with detection of impurities from solvents of formulations.
231	Rothman,AM: JAOAC., 63 (1980) 1296-99 [Engl.	Dicofol.	Formulations; Standards.	MeOH solution for HPLC.	Waters: [P] 6000A; [I] U6K; [D] 440 uv at 254nm.	Guard: stainless steel 50x4mm, 10µm LiChrosorb RP-18; DuPont stainless steel 250x4.6mm, 6µm Zorbax C8. MeOH/HOH/HAc (75:25:0.2), 2ml/min.	Detection of impurities at 0.1% level.	Specificity of Dicofol analysis & direct quantitation of contaminants in comparison to the method of hydrolyzable chlorine.
232	Roy,TA; Meeks,JR; Mackerer,CR: JAOAC., 66 (1983) 1319-21 [Engl.	Acifluorfen.	Feed: animal; Standards.	EtAc-extract, + IS, evaporate. reconstitute residue with MeOH.	[C] Hewlett-Packard 1084B; [D] variable uv at 280nm and 430nm ion-pair tetrabutyl ammonium phosphate.	1) 150x4.6mm 5µm Altex C18 rp, 2) 250x4.6mm, 5µm DuPont C-8 rp. MeOH/HOH phosphate buffer pH7.4 (58:42), for both at 1.5ml/min.	86-87%	Higher degrre of control possibilty for herbicide retention on column.
233	Ruckendorfer,H; Lindner,W: Internat.J.Environ.Anal. Chem., 8 (1984) 87-99 [Engl.	Benzoylprop-ethyl; 2,4-D; Dichlorprop; Flamprop-isopropyl; Fenoprop; MCPA; Mecoprop; Picloram; Pyridate; Pyridate metabolites; 2,4,5-T.	Wheat.	20-200 µg/kg spiked samples extracted with MeOH/0.05m NH_4Ac-soln.(70:30), purified & residue in mobile phase.	Kontron: [P] 410; [D] 720LC; [I] Rheodyne 7210 Valve switching Tracer 670.	Multicolumn: Anion exchange: 600x 4.6mm, 10µm LiChrosorb; 100x4.56mm: 5µm LiChrosphere ODS & RP2 10µm LiChrosorb. Set of mobile phases.	20 to 200ng/g; 80%	Minimal clean-up using multi-column set-up & mobile phase switching for pesticide mixture analysis.
234	Saner,WA; Gilbert,J: J.Liq.Chromatogr., 3 (1980) 1753-65 [Engl.	Chlorpyrifos.	Water: waterway.	CH_2Cl_2 extraction (decanted water), evpn., Sep-Pak cartridge enrichment.	[C] Perkin-Elmer Series 3 [D] Waters 440 [I] Micrometrics 725	Guard: Whatman CO: Pell ODS CN; 500x4.6mm Dupont ZORBAX-ODS. MeCN in HOH: (0.1 -> 30%, 5min., 30 -> 50% in 25min., 50 -> 80% in 20min., 80 -> 99.9%, 15min.), 1ml/min.	4-200ng/g ; 92 %.	Concentration gradient (spill mapping) of pesticide release due to fire at packaging plant site.

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235	Sato,T; Kohnosu,S; Hartwig,JF: J.Agric.Food Chem., 35 (1987) 397-402 [Eng].	Butachlor; Alachlor.	Soil; Standards.	Subject soil to varying conditions of concn., temperature, rate and mol.wt., supernatant for analysis.	[C] Shimadzu LC4A; [D] uv.	Stainless steel 250mm Shinwa Kako Ultron C-18. MeOH/HOH (77.5:22.5), 1.0ml/min.	Not specified; only adsorption parameters given.	Adsorption behaviour of pesticide in soil of different types at a set of relevant parameters.
236	Schaefer,CH; Dupras Jr,EF: J.Agric.Food Chem., 25 (1977) 1026-30 [Eng].	Diflubenzuron.	Soil: pasture; Vegetation; Water.	Soil and vegetation: extraction & clean-up by column chromatography; Water: extraction.	[C] Varian 8500; [D] uv photometer (254nm).	250x8mm; Micro-Pak-CH (octadecylsilane on 10µm particles). MeCN/HOH (70:30); 1ml/min.	Water: 0.2µg/kg, 70-103%; Soil & vegetation: 3.8µg/kg, 89-97%.	Residues in pasture land samples with controlled pesticide application.
237	Schaefer,CH; Wilder,WH; Mulligan III,FS; Dupras Jr,EF: J.Econ.Entomol., 80 (1987) 126-30 [Eng].	Fenoxycarb.	Water: pasture; Water: sewage; Water: tap.	C_2Cl_2 partitioning of spiked water, residue in MeCN for HPLC.	[C] Varian 8500; [D] uv photometer at 254nm.	Micro-Pak-CH 250x8mm. MeCN, 1.4ml/min.	0.004µg/g; retention times given.	Effect of temperature, pH, sunlight, adsorption on straw and polluted water on effectivity & persistence in field & lab.
238	Schmitz,DC; Leslie,AJ; Nall,LE: Pestic.Sci., 21 (1987) 73-82 [Eng].	Fluridone.	Plant: aquatic; Hydrilla; Sediment: lake.	CH_2Cl_2 extract, alumina column clean-up, elute for HPLC.	Perkin-Elmer: [C] Ser.2; [D; LC-75 uv at 313nm.	250x4.6mm 5µm Supelcosil LC-18. MeOH/HOH (60:40), 1.5ml/min.	10µg/l; 80-100%	Residue in Hydrilla verticilata varies with sampling site, period.
239	Selim,S; Cook,RF: J.Agric.Food Chem., 26 (1978) 106-10 [Eng].	FMC 25 213.	Soil; Soybean; Soybean: forage; Soybean: hay; Standards.	Aq.MeOH-extract, partition in CH_2Cl_2, + Na-bisulphite, clean-up on silica-gel, derivatize to phenylhydrazone.	[C] Waters ALC 202; [I] Valco CV-6-UH Pa-C-20; [D] Schoeffel SF 770 multi uv spectrophotometer at 336nm.	Waters 300x6mm µ Bondapak C18. MeCN/HOH (47:53), 3ml/min.	Soil 0.025mg/kg, 85%; Soybean & forage: 0.05mg/kg, 96% & 86% resp., Soybean hay 0.25mg/kg, 93%	Specificity of procedure for phenylhydrazone derivative as compared to GC.
240	Selim,S; Cook,RF; Leppert,BC: J.Agric.Food Chem., 25 (1977) 567-72 [Eng].	Karbutilate; Karbutilate metabolites.	Grass; Soil; Water; Standards.	HOH: -> pH5 (HCl), EtAc-extract. HOH/MeOH(1:2)-extract of grass & soil, partition in $CHCl_3$: (grass-extract clean-up on Florisil column). -> HPLC.	[C] Waters ALC 202; [I] Valco CV-6-UH Pa-C-20; [D] uv photometer at 254nm.	Waters 300x6mm microporasil. EtOH/$C_2H_4Cl_2$: water (3:9), soil (7:93). Grass EtOH/MeCN/$C_2H_4Cl_2$ (3:10:87), all 2.4ml/min.	water: 0.01mg/kg, 89-103%; 0.1mg/kg, soil: 84-95%; grass: 80-87%	Simultaneous demethylated metabolites detection in grass, soil and water hydrolysate.

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241	Senin,NN; Filippov,Yu.S; Tolikina,NF; Smolyanikov,GA; Volkov,SA; Kukushkin,VS: J.Chromatogr., 364 (1986) 315-21 [Eng].	Diuron; Fenuron; Fluometuron; Linuron; Metoxuron; Monuron.	Water: natural.	Preadsorption on Chromosorb 102 column & elution with acetone.	[C] Altex 100; [D] 254 nm UV	250x3.6mm, Partisil ODS 5µm. MeCN/HOH (100:30); 1.5ml/min.	0.0001- 0.00001 mg/l.	Concn. by preadsorption of trace organics from industrial effluents.
242	She,LK; Brinkman,UATh; Frei,RW: Anal. Letters, 17 (1984) 915-31 [Eng].	Carbaryl.	Water; Formulations; Standards.	Concentrate on R-18 precolumn, anion exchanger hydrolysis to α-naphthol, post-column reaction with o-phthalaldehyde for analysis.	[C] Varian 5000; [D] Perkin-Elmer 204A, fluorescence detection.	Stainless steel 100x4.6mm, 5µm LiChrosorb C-18.MeOH/phosphate buffer pH7.7 (7:3) at 0.5ml/min.	0.4-2ng per injection; 104-106%	Selective automated analysis using commercial switching units & pre-columns.
243	Shelton,DR; Karns,JS: J.Agric.Food Chem., 36 (1988) 831-34 [Eng].	Coumaphos; Coumaphos metabolites; Chlorferon; Potasan.	Formulation: CoRal; Solution: dip vat; Standards.	MeOH dilution of dip vat soln., centrifuge, store at 4°C for analysis.	[P] M 6000 A; [I] 712 WISP; [D] Perkin-Elmer LC-95 uv/vis variable wavelength.	Waters 4µm C18 Nova-Pak cartridge. MeOH/0.75M H_3PO_4 (80:20), 2.0ml/min.	Not specified.	Microbial degradation of cattle dip vats solns. in function of age, usage & aerobic or anaerobic conditions.
244	Shiga,N; Matano,O; Goto,S: J.Pesticide Sci., 7 (1982) 357-62 [Eng].	Dazomet.	Tomato; Cucumber; Cabbage.	Homogenization: 500g sample +200mg DDTC-Ag(heavy metal complexing agent) +50g NaOH +150ml CH_2Cl_2; precolumn sepn.	[C] Jasco TRIROTAR; [D] UVIDEC-100 III.	Stainless steel 250x4.6mm, 5µm Nucleosil 5 CN. EtAc/2,2,4 trimethylpentane (40:60); 1ml/min.	0.005-0.01µg/g; 86-88% ,78-83%, 88-95% in respective matrix.	Dazomet degradation products analysis comparative to GC procedure.
245	Shiga,N; Shimamura,Y; Matano,O; Goto,S: J. Pestic.Sci., 11 (1986) 585-89 [Eng].	Methylbromid.	Cabbage: chinese; Cucumber; Potato: white; Rice: unpolished; Wheat.	Charr with ethanolamine/EtOH/NaOH (15:380:3), ignite (400° -> 600° (7°C/min.), ash + HOH, soln. + $Ba(OH)_2$-soln., filtrate cation-exchanged for HPLC.	[D] UVIDEC-100-III uv spectrophotometer.	MCI GEL SCA 02 anion exchange column. 0.0005M K-biphthalate pH 4.5, 1.0ml/min.	0.7-3mg/kg; 73-91%	Selective for Br-content in crop with bromide resolution in presence of other inorganic ions.

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246	Singh,RP; Chiba,M: J.Agric.Food Chem., 33 (1985) 63-67 [Eng].	Benomyl.	Water; Standards.	MeOH soln., test solns. under varying pH.	[C] Perkin-Elmer Ser.3; [I] Rheodyne; [D] Perkin-Elmer LC-55-S uv at 286nm.	Precolumn: Whatman 50x4.6mm, 25-37µm COPELL ODS; Regis Hi-Chrom, 5µm Spherisorb ODS C-18. MeCN/HOH/buffer pH 7: (40:45:15) & (60:30:10), 0.8ml/min.	Solubilty values given.	Lab study of Benomyl instability (hydrolysate identification) in test solutions by buffers (pH variation).
247	Skelly,NE; Jackson,DJ; Anderson,PK: JAOAC., 64 (1981) 628-34 [Eng].	Chlorpyrifos.	Formulations.	Sample + 25ml IS soln. (37.5mg/25ml 1,4-dibromonaphthalene in MeCN)	[P] Altex 100; [I] Micrometrics 725; manual) Rheodyne 7125; [D] Perkin-Elmer LC55.	250x4.6mm, Zorbax ODS. MeCN/HOH/HAc (82:17.5:0.5) at 2ml/min.	Collaborative study for coefficient of variation: 0.35 -0.74% for 5 formulations.	Selection of column material and optimal analysis conditions.
248	Skelly,NE; Stevens,TS; Mapes,DA: JAOAC., 60 (1977) 868-72 [Eng].	2,4-D.	Formulations.	Saponify ester & salt formulations with 0.2M KOH in propanol/HOH (1:1), + 100mg p-bromophenol/25ml as IS.	[P] Milton-Roy 396-31; [I] Valco CV-6-UHP a C20; [D] DuPont 837 variable uv at 280nm.	Whatman 10-25µm Partisil ODS. MeCN/phosphate buffer pH 3 (20:80).	99%.	Analytical resolution of all impuritiy chlorophenols after in situ saponification.
249	Slahck,SC: JAOAC., 68 (1985) 567-69 [Eng].	Aminocarb.	Formulations; Standards.	IS-soln./tetrahydrofuran (5:95) soln., working soln. in mobile phase. IS: 3g n-butyrophenone in 100ml tetrahydrofuran.	[C] for pressure >17.5MPa; [D] uv absorbance at 246nm.	250x4.6mm, ≥10µm C18 Whatman Partisil-10 ODS at 1.5ml/min.	Collaborative study: coefficient of variation 0.72 -1.7%.	Retention time fluctuations on different columns eliminated by phosphate buffer.
250	Slahck,SC: JAOAC., 71 (1988) 317-20 [Eng].	Trichlorfon.	Trichlorfon: technical; Formulations; Standards.	Sulfisoxazole IS-soln. to Trichlorfon reference standard soln. for HPLC.	Chromatograph for pressures > 7MPa, with uv detector (214nm), ion-pairing octyl sulfonic acid (Waters PIC B8 Low UV).	Stainless steel 250x4.6mm, ≤7µm C18 bonded silica gel. MeCN/HOH(+PIC) (30:70), 1.5ml/min.	Not specified.	Study for quality control and storage stability.
251	Slahck,SC: JAOAC., 71 (1988) 23-26 [Eng].	Anilazine.	Formulations: concentrate; Formulations: powder, flowable; Formulations: powder, wettable.	230 mg equiv.Anilazine in MeCN (100ml+10ml IS soln.), sonicate, 20µl to HPLC.	[C] >7MPa (>1000psi) at ambient temp.; [D] 250nm, Octanophenone IS soln.: 4ml IS in 250ml MeCN.	250x4.6mm ≤ 10µm C18 bonded silica gel. MeCN/HOH (80:20), 1.7ml/min.	Response ratio of standard within ±1%.	Collaborative study between 15 laboratories.

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252	Slahck,SC: JAOAC., 71 (1988) 988-90 [Eng].	Azinphos-methyl.	Formulations; Standards.	Sample + 10ml IS soln., in MeCN soln. for HPLC. IS soln.: 10% v/v n-butyrophenone in MeCN.	[C] >7MPa pressure; [D] uv spectrophotometer at 285nm.	250x4.6mm, ≤10µm C18 (DuPont Zorbax ODS or equiv.).MeCN/HOH (65:35), 1.5ml/min.	Statistical analysis of results from 15 collaborators.	Adopted as interim official first action method.
253	Slates,RV: J.Agric.Food Chem., 31 (1983) 113-17 [Eng].	Chlorsulfuron.	Barley: green, grain, straw; Oat: green, grain, straw; Wheat: green, grain, straw.	EtOAc-extract, residue in CH_2Cl_2 + buffer, evpn., cool (oils), filter, $CHCl_3$, cylohexane wash, acidify, $CHCl_3$-extract, residue in mobile phase.	[C] DuPont 850; [D] Tracor 965 photoconductivity after size exclusion chromatography on 290x25mm Bio-Rad Beads S-X3 column with Autoprep 1001.	DuPont 250x4.6mm, Zorbax Sil (acidic isopropanol conditioned). Cyclohexane/isopropanol /MeOH (750:125:125), 1.0ml/min.	1ng; green: 0.05mg/kg, 87%; grain: 0.01mg/kg, 84%; straw: 0.05mg/kg, 80%.	Persistence in green plants after postemergence field application.
254	Smith,AE: Bull.Environ.Contam.Toxicol., 39 (1987) 150-55 [Eng].	Fluazifop-butyl.	Soil: clay; Soil: clay loam; Soil: sandy loam; Standards.	Extract soil (≤10% moisture): MeCN/HOH/(HAc)glac (80:20:2.5), neutralize, evaporate, hexane extract in MeOH.	Waters: [P] 510; [D] 490 uv programmable.	Steel column 150x3.5mm, Nova Pak C.18. MeOH/HOH (85:15), 0.5ml/min	1.0µg/g, 90%.	Persistence under field (complete hydrolysis with ≥65% moisture) and laboratory conditions studied.
255	Smith,AE; Lord,KA: J.Chromatogr., 107 (1975) 407-10 [Eng].	Chlorotoluron.	Soil: silty loam; Soil: sandy loam; Soil: silty clay; Standards.	MeOH extraction of spiked soil samples & silica gel clean-up.	Lab made chromatograph with variable uv detector at 240nm.	Stainless steel 200x4mm, 10µm Merckosorb SI60. n-Hexane/2-propanol (15:85), 1.1ml/min.	0.1, 0.1, 0.2µg/g; 77, 73, & 64%	Interference due to Diuron & Monuron.
256	Solinas,V; Melis,P; Gessa,C: Agrochimica, 26 (1982) 138-45 [Ital].	Atrazine; Atrazine metabolites.	Formulations.	Dissolution & hydrolysis.	[C] Waters 6000A; [I] U6K; [D] Perkin-Elmer LC-55 UV-visible.	Waters µ-Bondapak C18. 300x3.9mm. HOH/MeCN (50:50), 1.5ml/min.	2.7ng; 3.7ng.	Residues in colloidal and org. components of soils.
257	Soulier,J; Farines,M; Vicens,G: Pergamon Ser.Environ.Sci., 3 (1980) 203-09 [Eng].	Amitrole.	Soil: clay; Vine: leaves.	Soil: MeCN/HOH/NH_4OH(20%) (120:60:6) extract, boil, pH -> 6, filtrate concn.(3ml); leaves: MeCN extract, residue in HOH, nitrosation; both for HPLC.	[C] Varian 8500; [D] uv at 254nm.	240x5mm, Aminex A7 7-11µm cationic resin. Aq. H_2SO_4 (pH 4).	5ng. Soil: 85%; vine leaves: 94%	Pesticide: in vine leaves, no trace; in soil from vine-yards, only in 5cm upper layer.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
258	Spalik,J; Gilbert,J; Lau,M; Lemley,AT: J.Chromatogr., 253 (1982) 289-94 [Eng].	Aldicarb.	Water: drinking; Standards.	Preconcentration: Aldicarb solns. through C18 Sep-Paks, MeOH eluate for HPLC.	[P] Waters 6000A; [D] Waters 440 uv absorbance at 254nm.	µBondapak C18. MeOH/HOH+4% HAc (25:75) at 1.0ml/min.	5µg/l; 100%	Pesticide monitoring in drinking water and in procedure development for water detoxification.
259	Spierenburg,ThJ; Kemmeren-van Dijk,MBH; Zoun,PEF: J.Chromatogr., 393 (1987) 137-39 [Eng].	Aldicarb.	Gizzard; Stomach contents; Standards.	$CHCl_3$-extract to glass 150x10mm clean-up column, eluate residue in aq. soln. on Baker-10 SPE octadecyl column, MeOH eluate for HPLC.	Spectra-Physics: [C] SP 8700; [D] SP8400 uv at 247nm.	Chrompack LiChrosorb 10 RP-18 or 250x4.6mm CPSpher C18 with guard column: 75x2.1mm, RP-18. MeCN/HOH (27:73) at 1.4ml/min.	60µg/kg; 75-104%.	Clean-up without derivatization for a routine screening procedure.
260	Spittler,TD; Maraflott,RA; Helfman,GW; Morse,RA: J.Chromatogr., 352 (1986) 439-43 [Eng].	Carbaryl; Parathion-methyl; Azinphos-methyl; Fenvalerate.	Honeybee; Pollen.	Blend 20g.sample in acetone; succesive partition with hexane & CCl_4; residue + MeOH.	[P] Tracor 951; [I] Rheodyne 7125; [D] Tracor 970A & McPherson 750 Fluorometer.	100x4.6mm, C8. MeOH/HOH (45:55), 2.0ml/min.	4ng Carbaryl 0.5µg/g; 81% in bees; 0.15µg/g; 72% in pollen.	Multiresidue in poisoned bees with simultaneous GLC.
261	Stanton,DT: J.Agric.Food Chem., 36 (1987) 856-59 [Eng].	Oxycarboxin.	Standards.	Set up for effect of light, temperature, solvent type, container surface on pesticide stability in soln.	Waters:[P] 6000A & M-45; [I] U6K; [D] 450 variable uv at 254nm.	250x4.6mm 5µm Spherisorb. MeCN/HOH (40:60), 1.5ml/min.	50ng/ml aqueous	Effect of different solvents & surfaces (plastic vials and glass) on pesticide decomposition.
262	Stevens,TS; Chritz,KM: JAOAC., 78 (1987) 47-48 [Eng].	Dalapon; Dalapon acid; Dalapon derivatives.	Standards; Formulations: Na- & Na/Mg-salt.	HOH content of standards(hygroscopic) determined then 130 mg dalapon acid dissolved in 50ml water.	[C] HP 1090 diode array detector LC with Integrator HP-3392A .	250x4.6mm, Whatman 10-25ODS-3/Dupont Zorbax amino. MeCN/n-octylamine/HOH (200:1.6:798,4) +2.4g $NH_4.HPO_4$); MeCN/HOH/H_3PO_4 (pH3), 2ml/min.	With premixed eluant 140.6mg dalapon acid in 50 ml water.	Method development collaboratively with AOAC.
263	Stevens,TS; Wedelstaedt,C: JAOAC., 66 (1983) 1390-94 [Eng].	Dalapon.	Dalapon salts; Standards.	Dissolve in HOH.	Collaborative study specifications: [C] with 5000 psig gage; [I] 20µl loop; [D] 214nm uv for ion-pairing with n-octylamine.	Guard: stainless steel 50x4.6mm Co:Pell ODS; Waters 100x8mm, 10µm C18 radial compression. MeCN/aq. phosphate buffer pH 7.0 (200:800),2,3ml/min	Deviation max. 2.2% between each assay.	Collaborative study of six labs. (with varying instrumentation) for official first action method.

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264	Stringham,RW; Bennett,BR: JAOAC, 66 (1983) 1207-08 [Eng].	Diclofop-methyl.	Formulations: Hoelon 3EC, Hoelon, 99%; Standards: reference.	Solution of 100mg of samples & standards in 100 ml mobile phase	[C] Varian 5060 with Autosampler 8055. [D] Perkin Elmer LC 55B.	Alltech C-18, 10µm. MeCN/2% HAc (70:30), 1.5ml/min.	Relative standard deviation average 0.55%; recovery 99%.	Direct analysis without any matrix interference.
265	Ternes,W; Rüssel-Sinn,HA: Z.anal.Chem., 326 (1987) 757-59 [Eng].	Amitrole.	Kidney; Liver; Muscle: bird.	MeOH extract, concn., n-hexane wash(fats), add HOH + 2-aminothiazole IS, to alumina column, eluate to Sephadex GPC 10, HCOOH eluate fraction for HPLC.	[P] Knauer 52.00; [I] Rheodyne 7120; [D] Metrohm VA 611 electrochemical, ion-pairing at +1.2mV (vs Ag/AgCl; 3M KCl).	Stainless steel 300x4mm, 5µm RP-C-18. MeCN/HOH (+$LiClO_4$ & 6% $HClO_4$ to pH 3.2) (30:70), 0.75ml/min.	60ng/g; 79.8±4.3%	Gel permeation clean-up for sensitive detection in animal tissue (small sample) without derivatization.
266	Teubert,WE; Stringham,RW: JAOAC., 67 (1984) 303-05 [Eng].	Benomyl.	Formulations; Standards.	Extract sample in MeCN/n-butyl isocyanate (97:3) for HPLC.	[C] pressure >7MPa (1000psi); [D] uv at 280 or 290nm.	10µm rp C-18.	Collaborative study gives coefficient of variation.	Simple, rapid, precise & reproducible procedure.
267	Thomas,MB; Sturrock,PE: J. Chromatogr., 357 (1986) 318-24 [Eng].	Aldicarb; Aminocarb; Bendiocarb; Carbaryl; Chlorpropham; Desmedipham; Dimethoate; Methiocarb; Methomyl; Metolachlor.	Standards.	None.	[C] DuPont 830; [P] Haskel & Spectra-Physics; [D] platinum working electrode flow-cell with wall jet.	150x4.6mm, ZorbaX ODS. MeCN/acetate buffer (1:1); 1.0ml/min.	500ng injections.	Electrochemical detector application study.
268	Ting,KC; Kho,PK; Musselman,AS; Root,GA; Tichelaar,GR: Bull.Environ.Contam.Toxicol., 33 (1984) 538-47 [Eng].	Aldicarb; Carbaryl; Carbofuran; Mercaptodimethur; Methomyl; Oxamyl.	Apple; Cabbage, red; Celery; Cilantro; Cucumber; Grapefruit; Lettuce; Mint; Mushroom; Onion; Orange; Parsley; Pear; Spinach; Zucchini.	MeCN extraction for one group; clean-up for the rest. Each spiked with 0.5mg/kg pesticide.	[C] Beckmann gradient liq. sys.324; [D] Gilson Fluorometer for post-column derivatized fractions.	Precolumn: 40x3.2mm, 30-38µm C18 ODS, MeCN/HOH (5:95). Analytical: 250x4.6mm ultrasphere ODS 5µm, MeOH/petrolether: (10:90) & (30:70).	Spiked with 0.5µg/g; Recovery (1) 76-99% (2) 72- 107%.	Shorter extraction procedure using fluorescence detection for one group of samples.
269	Trujillo,A; Gnanasambandan,T; Freiser,H: Anal.Chim.Acta, 162 (1984) 333-38 [Eng].	Coumaphos; Diazinon; Parathion; Parathion-methyl; Phorate.	Standards.	None.	[P] Altex 110A; Spectra-Physics: [I] SP-419-0410. [C] SP-3500B [D] SP-8200 uv/visible & refractive index.	250x4.6mm, 10µm Partisil ODS-2 & Spherisorb S5-ODS-2. MeCN/HOH (1:1) with 0.10mM dye Brilliant Green 62.0 mM NH_4PO_4.	0.20, 0.20, 0.10, 0.10, 0.50 µg.	Sensitivity enhanced by analyte-dye interaction for neutral aromatic pesticides.

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270	Tuinstra,LGMTh; Roos,AH; Bronsgeest,JM: Med.Fac.Landbouwetensch.Rijksunlv.Gent, 41 (1976) 1443-48 [Eng].	2,4-D; 2,4-DB; Dicamba; Dichlorprop; Mecoprop; MCPA; 2,4,5-T.	Standards; Water: canal.	Sephadex QAE A-25 anion preconcentrate, eluate, $CHCl_3$ extract, residue in mobile phase.	[P] Orlita 1515; [I] Chromatronix HPSV 250µl; [D] Cecil 212 uv at 286nm.	Stainless steel 100x4.5mm; Partisil 5. Hexane/HAc. (92.5:7.5).	For most pesticides between 10µg to 100ng i.e. 0.01-1mg/kg; >80% .	Screening method only due to low sensitivity (compared to GLC-ECD) of uv detection.
271	Vermeulen, NMJ; Apostolides,Z; Potgieter,DJJ; Nel,PC; Smit,NSH: J.Chromatogr., 240 (1982) 247-53 [Eng].	Atrazine; Atrazine metabolites.	Soil: sandy loam; Standards.	HOH/MeCN (10:90) extract of spiked soil, residue in MeOH for HPLC.	[C] Beckmann 322/ Spectra-Physics SP 8000; [D] SP 8400 uv-vis variable at 254nm; Beckmann: 220nm.	250x4mm Ultrasphere octyl. MeOH/HOH (40:60) pH 7.4 with 1% HAc or 50mM NH_4Ac at 1.0ml/min.	220nm: 0.1mg/kg, 254nm: 1mg/kg; Atrazine: 78.4 ± 4.2%, Hydroxy-A:72.5±4.8% .	Procedure applicable for pesticide residues in soil.
272	Vickery,TM; Karlesky,DL; Blackmer,GL: JAOAC., 63 (1980) 506-10 [Eng].	Atrazine.	Soil; Standards.	HOH/MeCN (10:90) extraction, CH_2Cl_2 partition	Altex:[P] 110; [D] 153 uv at 254nm. []	250x3.2mm, 10µm LiChrosorb C18 ODS. MeCN, 2ml/min.	5ng.	Analytical procedure with study of elimination of background effect.
273	Victor,DM; Hall,RE; Shamis,JD; Whitlock,SA: J.Chromatogr., 283 (1984) 383-89 [Eng].	Ethoxyquin; Maleinhydrazide; Thiabendazole.	Water: waste; Standards.	Water sample spiked with pesticide (MeOH)-soln. for HPLC.	[P] Altex 110A; [I] Rheodyne; [D] Perkin-Elmer 650-105 fluorescence spectrophotometer / Bioanalytical Sys. LC-2A electrochem.	250x4.6mm, Altex 10µm Ultrasphere ODS. MeOH/buffer, 0.043 phosphate pH 2, (80:20); Thiabendazole: MeOH/triethanolamine (+HAc-buffer) (70:30)	1µg/l; 92-120%	Routine analytical procedure with little or no clean-up for industrial wastewaters & affected waterways.
274	Voyksner,RD; Bursey,JT; Pellizzari,ED: J. Chromatogr., 312 (1984) 221-35 [Eng].	Asulam; Baycarb; Benomyl; Carbaryl; Carbofuran; Chlorpropham; Desmedipham; Phenmedipham; Propoxur; Chloramben; 2,4-D; 2,4,5-T; Dicamba; Fenoprop; Picloram; Methomyl; Oxamyl.	Standards.	Filtration.	Waters: [P] 6000A, [I] UK-6, [D] 440 UV coupled to Finnigan 4500 mass-spectrometer (direct liquid injection desolvation chamber).	150x4.6 mm, C18 5µm. AcCN/HOH (60:40), 1.5ml/min.	µg quantities (tablulated).	Applicability study HPLC coupling by desolvation chamber to mass-spectrometer.
275	Voyksner,RD; Bursey,JT; Pellizzari,ED: Anal.Chem., 56 (1984) 1507-14 [Eng].	Alachlor; Aldicarb; Asulam, Benzoylprop-ethyl; BPMC; Carbaryl; Carbofuran; Desmedipham; Diuron; Fluometuron; Linuron; Phenmedipham; Propachlor; Propoxur.	Standards.	None.	Waters: [C] 720; [P] 6000A; [I] U6K; [D] 440 UV at 254nm in line with TSP interface to Finnigan 4500 quadrupole MS.	250x4.6mm, Zorbax CN. MeOH/HOH (60:40) at 1,2ml/min.	5-20ng.	Comparison of TSP-MS results with other sample introduction methods.

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276	Voyksner,RD; Haney,CA: Anal.Chem., 57 (1985) 991-96 [Eng].	Ametryne; Atraton; Atrazine; Azinphos-ethyl; Azinphos-methyl; Cyanazine; Cyprazine; Dicrotophos; Dimethametryn; Dimethoate; Dipropetryn; Hexazinone; Menazon; Procyazine; Prometryn; Propazine; Simazine; Terbuthylazine; Terbutryne	Standards.	None.	Waters: [P] 6000A & Milton Ray 709; [I] U6K; [D] 440 uv & Finnigan 4500 quadrupole MS with Thermospray (=TSP)-interface.	250x4.6mm, Zorbax C8. MeOH/HOH(0.1M NH_4Ac) (60:40)	Qualitative chromatograms for each group of pesticide.	Effect of temperature, buffer, & solvent on stability of MS detection by TSP coupling (technique for ionization of effluents.
277	Wachholz,S; Geißler,H; Perner,G; Bleck,J: Z.Anal.Chem., 329 (1988) 768-72 [Ger].	Chlorpropham; Phenmedipham; Proximpham.	Standards.	Standard solutions.	[C] Chromatron ZWG; [D] LCD 2563 LP & Digilab FTS 20 FTIR spectrometer with on-line coupling interface.	Glass 150x3.2mm, 5µm Separon SIX. $CHCl_3$, 0.19ml/min.	1µg (FTIR detcn. of HPLC separated fractions).	Interface optimization, chromatographic parameters & selectivity of detection studied.
278	Walters,SM; Westerby,BC; Gilvydis,DM: J.Chromatogr., 317 (1984) 533-44 [Eng].	Chlorbromuron; Chlorotoluron; Chloroxuron; Difenoxuron; Diflubenzuron; Diuron; Fenuron; Fluometuron; Isoproturon; Karbutilate; Linuron; Metobromuron; Metoxuron; Monolinuron; Monuron; Neburon; Siduron; Thiadiazuron.	Standards; Strawberry: extracts.	None.	[P] Perkin-Elmer 3B, [D] Kratos 773 variable uv and Tracor 965 photoconductivity detector.	250x4.6mm: 6µm Zorbax ODS & Zorbax CN 6µm spherical silica. 100x4.6mm, Microsorb C18 3µm. Isooctane/MeOH/2-propanol; for reverse phase columns: MeOH/HOH.	Relative responses only given.	Applicability study with optimization of detector response.
279	Ware,GW; Estesen,B; Cahill,WP: Bull.Environ.Contam.Toxicol., 20 (1978) 17-19 [Eng].	Carbaryl.	Cotton: leaves.	Extraction in acetone.	HPLC without specification.	250mm Partisil 10. EtOH(abs.)/hexane (10:90).	114mg/m^2	Rate of Carbaryl disappearance from cotton leaves (16% of initial after four days).

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280	Wells,MJM; Michael,JL: Anal.Chem., 59 (1987) 1739-42 [Eng].	2,4-D; Picloram.	Water; Standards.	Picloram: to Baker C18 disposable column (pH2), HAc-eluate; 2,4-D: MeOH-soln.; both for HPLC.	[C] 720 system controller + 710B processor; [D] 440 uv absorbance & Lab Data Control SpectroMonitor III variable uv.	Guard: Whatman 70x2.2mm, 30-38µm CO:PELL ODS; Altex 150x4.6mm 2UE 5354N, 5µm Ultrasphere ODS. 4%HAc/MeCN: (95:5) for Picloram at 254nm & (60:40) for 2,4-D at 280nm; 1.5ml/min.	Picloram: 98.2%; 2,4-D: 91.9%	Multiresidue of differing hydrophobicity analysis by a multistage procedure.
281	Wells,MJM; Michael,JL: J.Chromatogr.Sci.,25 (1987) 345-50 [Eng].	AC 243,997; Chlorsulfuron; Sulfometuron.	Water; Standards.	Adsorption on C18 column (disposable, aq. MeOH pretreated, pH 2) MeOH elution, residue in MeCN or mobile phase.	Waters: [C] 720 system controller + 710B processor; [P] 6000A; [D] Lab Data Control Spectro Monitor III, variable uv.	Altex 2U E5354N & 4U 2579N, 5µm Ultrasphere ODS. 0.1M H_3PO_4/MeCN: (80:20) for AC 243,997 at 195nm, (65:35) for rest, detection at 235nm; 1.5 & 1.6ml/min respectively.	87-108% .	Applicability of solid phase extraction procedure for aqueous environmental samples.
282	White,KD; Min,Z; Brumley,WC; Krause,RT; Sphon,JA: JAOAC., 66 (1983) 1358-1364 [Eng].	Coumaphos.	Egg; Milk.	Extract milk with acetone & egg with MeCN to analysis.	[C] DuPont 8820 gradient; [D] variable uv interfaced to Finnigan 4023T mass spectrometer.	DuPont 250x4.6mm Zorbax C-8 rp. MeCN/HOH, 20%(2min.) -> 50%(10min) -> 70%; 1.5ml/min.	0.005mg/kg.	Efficiency & tolerance towards co-extractives of LC/MS greater than by GC/MS.
283	Whittle,PJ; Rennie,PJ: Analyst, 113 (1988) 665-66 [Eng].	Formaldehyde.	Water: river; Standards.	React with 2,4-dinitrophenylhydrazine, CH_2Cl_2 extraction. residue in MeCN for HPLC.	Not specified; [D] uv at 254nm.	250mm, 10-µm LiChrosorb RP-18. MeCN/HOH (55:45) at 1.0ml/min.	5.6µg/l; 93%	Monitoring of trade effluents in river water for HCHO & intermediates of HCHO-urea resins.
284	Wigfield,YY; Lanouette,M: JAOAC., 71 (1988) 325-327	MCPA; MCPA contaminants.	Formulations: technical; Standards.	Sample + 0.2M KOH (300 mg/25ml), on porous graphite guard cell (Environm. Sci. 5020). HOH/isopropanol (60:40) elution.	Spectra Physics: [C] SP8100 + autosampler SP8110; [D] Coulochem 5100A with analytical cell (Environmental Sciences 5010).	Guard: Whatman 76x2mm Co:Pell ODS; 250x4.6mm, Brownlee 5µm Spheri-5 RP18. MeOH in HOH (40 -> 70% in 35min. till 50min; reverse (70 -> 40%) 55min. till 60min. equilibrate; 1ml/min.	Active ingredient content and 4 different contaminating chlorophenols determined.	Contamination by dioxin precursor chlorophenols in MCPA manufacture studied.

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285	Wigfield,YY; Lanouette,M: JAOAC., 68 (1985) 1142-48 [Eng].	2,4-D diethanolamine salt.	Formulations; Standards.	2,4-D retained on anion exchange column, diethanolamine on cation exchange column.	Spectra-Physics: [C] 8100; [I] Rheodyne 5302; [D] SP8440 variable uv, 234nm & Thermo Electron 502A.	Brown-Lee 250x4.6mm Spheri-5 cyano np. MeOH/benzene/CH_2Cl_2 (5:60:35), 1ml/min.	N-nitrosodiethanolamine: 1ng≡0.1µg/g AI; 92.7-100%	Identity of derivatized analyte confirmed by GC-MS.
286	Williamson,JE; Evans,N: J.HRC.& CC., 4 (1981) 130-31 [Eng].	Atrazine.	Soil; Standards.	Soxhlet extract with MeOH for HPLC.	[P] Magnus P 400D; [D] Cecil CE 212A uv & Varian MAT44 quadrupole mass spectrometer.	100x4mm 5µm Spherosorb ODS. MeOH at 1.5ml/min.	10ng ≡ 0.4µg/g	Simple extraction procedure without co-extractive interferences from soil matrix.
287	Wilson,AM; Bushway,AA; Bushway,RJ: J.Agric.Food Chem., 29 (1981) 746-49 [Eng].	Chlorpropham.	Bean: green; Blueberry; Pea; Potato.	MeOH extract, concentrate through acid alumina column, for HPLC.	Waters: [C] ALC/GPC; [I] U6K; [D] Schoeffel 450 variable uv at 236nm.	Waters 30x3.9mm, µBondapak C18 ODS on 10µm Porasil. MeOH/MeCN/HOH (35:35:30), 1.0ml/min.	0.12mg/kg, 64-102%.	Pesticide not removed from peel by washing stored potatoes.
288	Wilson,AM; Bushway,RJ: J.Chromatogr., 214 (1981) 140-47 [Eng].	Azinphos-methyl; Azinphos-methyl metabolites.	Apple; Bean: green; Blueberry; Potato; Tomato.	MeOH extract, concentrate (+HOH), partition in CH_2Cl_2, residue in MeCN, clean-up on MeOH/HOH avtivated C18 Sep-Pak.	[P] Waters 6000A; [I] U6K; [D] Schoeffel variable uv.	Waters 300x4mm, 10-µm C18 µBondapak. MeCN/HOH (50:50) at1.3ml/min.	Azinphos-methyl: 0.16mg/kg, O-analogue: 0.4mg/kg; 75-105% .	Applicability to pesticide residue analysis in food studied.
289	Wink,O; Luley,U: Pestic.Sci., 22 (1988) 31-40 [Eng].	Diclofop-methyl; Fenoxaprop-ethyl.	Soil.	MeCN/HOH eluate of spiked soil, hexane partition, EtOEt extract of free acids, methylate.	[P] Spectra-Physics SP8700; [D] Kratos Spectroflow 757 uv at 216nm & 240nm respectively.	Daicel Chem. 250x4.6mm Chiralcel OK. benzene/propan-2-ol (7:3), 2ml/min.	Detcn. of enantiomeric forms only. Racemisation of pesticide (esters) in soil on incubation.	Pesticide (esters) racemisation by soil incubation & enantiomeric inversion studied.
290	Woolson,EA; Aharonson,N; Iadevaia,R: J.Agric.Food Chem., 30 (1982) 580-84 [Eng].	Cacodylic acid; Cacodylic acid metabolites; MAA.	Soil.	NH_4OH-extract + (8-quinolinol).SO_4, purify on active-C column, concentrate for HPLC; TLC clean-up, spot in dil.MeOH for HPLC.	[C] 660 solvent programmer; [P] A-6000; [D] Perkin-Elmer 603 AAS with HGA-2100 graphite furnace.	Dionex glass 250x3mm anion exchange. HOH/MeOH (80:20) -> 0.02M Ammoniumcarbonate/MeOH (85:15), 1.2ml/min.	Metabolism in soil given.	Aerobic & anaerobic degradation in soils as also after sludge treatment studied; confirmation by GC-MS.

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291	Woolson,EA; Aharonson,N: JAOAC., 63 (1980) 523-28 [Eng].	Cacodylic acid; MAA.	Standards; Soil.	Remove soluble interference on 150x3mm Dionex low capacity anion exchange precolumn.	Waters: [C] 660 solvent flow programmer; [P] 6000A; [I] Glenco svov-6-1x; [D] Perkin-Elmer 603 AAS + HGA-2100 graphite furnace with HPLC interface.	Dionex 250x3mm. 1: HOH/MeOH (80:20), 2: 0.02M $(NH_4)_2.CO_3$/MeOH (85:15); 1.2ml/min. nonlinear concave profile of 100% 1 to 100% 2 in 20min.	5ng As, linear (5-200ng); soil: preliminary results (aq.NH_4OH-extracts interference).	Non-interfering solvent system & matrix interferences study for AAS-graphite furnace application.
292	Worobey,BL; Shields,JB: JAOAC., 70 (1987) 1021-24 [Eng].	Naptalam; Naptalam metabolites.	Asparagus; Cranberry; Peach.	Distillation with 30% NaOH + Zn-granules & paraffin, distillate for HPLC.	[I] Rheodyne 7125; [D] Bioanalytical Sys. LC-4B amperometric electrochem.	Precolumn: Waters P/N 080040 Guard-Pak C-18; Hamilton 305x7mm, 10µm PRP-1. MeCN/0.15M o-phosphoric acid, 2ml/min.	1-naphthylamine 0.30ng/injection; 89±2% to 97±8%.	Electrochemical detection of hydrolysate 1-naphthylamine.
293	Wright,AN; Roberts,TR; Dutton,AJ; Doig,MV: Pesticide Biochem.& Physiol., 13 (1980) 71-80 [Eng].	Cypermethrin.	Lettuce; Cotton: leaves.	Extract with MeCN/HOH (7:3) at 70°C, evpn., residue in MeCN, EtOAc/petroleum spirit partition, TLC separation, to HPLC for purified fractions.	[P] Altex 110; [D] Cecil uv in series with ICN Tracerlab Coruflow cell detector.	Stainless steel 200x4.5mm, 5µm Hypersil ODS. MeCN:HOH (25:75).	Separation of metabolites only.	Procedure for HPLC purification of TLC separated components.
294	Wright,LH; Jackson,MD; Lewis,RG: Bull.Environm.Contam.Toxicol., 28 (1982) 740-47 [Eng].	Aldicarb; Aldicarb metabolites.	Water: well.	Na_2SO_4 anhy.-dried CH_2Cl_2 extract, evpn. in presence of hexane, take-up in hexane for HPLC.	[P] Tracor 995; [I] Rheodyne7125; [D] Finnigan 2000 mass spectrometer with LC interface.	DuPont 150x4.2mm nitrile. 2-propanol/C6H12, 1.2ml/min.	0,3ng; sulfoxide 0.6ng, sulfone 0.3ng.	Optimization of mobile phase flow-rate studied.
295	Xu,Y; Lorenz,W; Pfister,G; Bahadir,M; Korte,F: Z.anal.Chem., 325 (1986) 377-80 [Eng].	Ametryne; Atrazine; Cyanazine; Desmetryn; Prometon; Prometryn; Propazine; Simazine; Terbumeton; Terbutryne; Terbuthylazine; Trietazine .	Soil.	MeOH extraction, solution of residue in EtAc-cyclohexane.	[C] HP 1090 with uv detector.	Hewlett-Packard Microbore 200x2.1 mm RP18. MeCN/HOH (45:55) -> (40:60) in 20 min.	10ng/g; recovery: 78-110%.	Results compared with thin capillary GC.
296	Zahnow,EW: J.Agric.Food Chem., 30 (1982) 854-57 [Eng].	Chlorsulfuron.	Soil.	Na_2CO_3+$NaHCO_3$ (0.1M each, pH 10)-extract, $CHCl_3$ wash, pH -> 3-4 (HCl), toluene extract + HAc, evpn., residue in mobile phase.	[C] DuPont 850; [I] Valco CV-6-UHPa-N60; [D] Tracor 965 photoconductivity.	DuPont 250x4.6mm Zorbax SIL. Cyclohexane/2-propanol/MeOH/10% HAc (750:125:125:1), 0.5ml/min.	0.2ng/g.80±16%	Comparative bioassay confirmation of the study presented.

No.	REFERENCES	PESTICIDES	SUBSTRATES	TREATMENT	APPARATUS	COLUMN, MOBILE PHASE	DETCN. LIMIT, RECOVERY	REMARKS
297	Zehner,JM; Simonaitis,RA; Bry,RE: JAOAC., 63 (1980) 47-48 [Eng].	Bendiocarb.	Wool.	MeOH/HOH (+0.005% methyl benzoate) (95:5) extract of wool diluted with HOH for HPLC.	[C] DuPont 820; [I] Altech 21MPa (3000psig); [D] Lab Data Spectro Monitor II uv at 280nm.	Stainless steel 250x2.1mm DuPont Zorbax ODS. MeOH/HOH (55:45), 0.25/ml/min.	4mg/kg; 96-101%.	Detection at 280nm elimminates interferences of co-extractives.
298	Zimmerli,B; Marek,B: Mitt.Geb.Lebensmittelunters.Hyg., 66 (1975) 362-78 [Ger].	HCB; HCH alpha-; HCH beta-; HCH gamma-; DDT; DDE p,p'-; Dieldrin.	Oil: sunflower; Lard; Butter.	50mg/12g fat on Porasil A column 600x7.8mm, mobile phase elution,analyse fractions. Column regeneration: 20ml CH_2Cl_2, then 30ml mobile phase.	[C] Waters ALC 201; [P] Waters 6000 .	Steel tube 600x2.3 mm, 1.2g Waters Porasil A, 37-50µm. n-Hexane/CH_2Cl_2 (9:1) 2ml/min.	1-5 µg/kg by GC analysis; recovery 80-90% (20mg spiked oil).	Effect of oil (charge on column) on regeneration with mobile phase studied.
299	Zweig,G; Gao,Ruyu: Anal.Chem., 55 (1983) 1448-51 [Eng].	Benomyl; Carbendazim.	Water.	Water passed through Milli-Q System; mobile phase through Millipore.	[C] Waters 6000A with Data Module + Integrator; [D] Spectronic 2000.	250x2mm, Brownlee RP-18 Spheri 5. AcCN/HOH (50:50), 1.5ml/min.	Carbendazim: 5ng, Benomyl: 7.5ng.	Kinetic study showing spontaneous Benomyl-conversion in MeCN solution to Carbendazim.
300	Zweig,G; Gao,Ruyu; Witt,JM; Popendorf,W; Bogen,K: J.Agric.Food Chem., 32 (1984) 1232-36 [Eng].	Carbaryl.	Skin: exposed; Residues: leaf dislodgable.	MeCN extract of gloves & patch monitors; CH_2Cl_2 extract of leaf-wash soln. evpn., take-up in MeCN.	[C] Waters 6000A; [I] automatic injector; [D] 4530 variable uv at 230nm.	Waters 250x2mm µBondapak C-18 rp. MeCN/HOH (40:60), 2ml/min.	2ng; gloves & patches: 92.6%-106.7%, leaves (detergent soln.): 84.9-97.3%.	Exposure of workers (grouped according to personal characteristics) comparative to other similar studies.