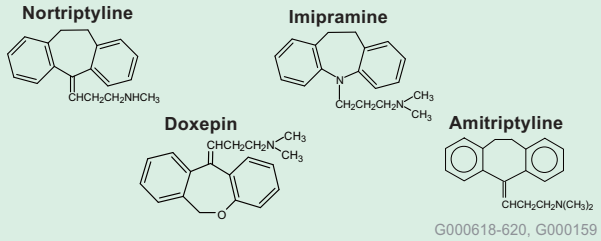


G000618-620, G000159

Efficiency of Recovery

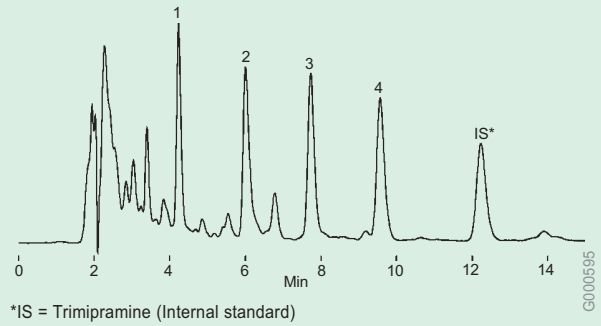
Compound	Concentration (µg/mL)	%Recovery	%RSD (n=6)
1. Nortriptyline	0.10	103.6	±4.5
	0.50	97.5	±4.5
2. Doxepin	0.10	102.2	±3.0
	0.50	100.8	±1.8
3. Imipramine	0.10	92.0	±1.5
	0.50	97.5	±1.7
4. Amitriptyline	0.10	93.6	±1.2
	0.50	95.7	±1.4

SPE Procedure, Using Zymark RapidTrace SPE Workstation

Step	Solvent/ Solution	Volume (mL)	Flow Rate (mL/min)	Comments
1. Condition	MeOH	2.0	5.0	conditions sorbent
2. Condition	H_2O	2.0	5.0	conditions sorbent
3. Load	spiked porcine serum	2.0[A]	0.75	applies serum sample
4. Rinse	20% MeOH in H_2O	2.0	5.0	washes sorbent
5. Purge-Cannula	H_2O	4.0	30.0	cleans sample cannula
6. Rinse	vent	0.1	2.0	positions SPE tube over waste port
7. Dry	N_2	Time = 10 min		dries sorbent
8. Purge-Cannula	MeOH	4.0	30.0	cleans sample cannula
9. Collect	MeOH	1.0	1.0	elutes analytes into collection vessel
10. Collect	vent	6.0	3.0	pushes residual eluent into vessel[B]
11. Purge-Cannula	H_2O	4.0	30.0	cleans sample cannula

[A] 1mL porcine serum spiked with 0.1µg/mL or 0.5µg/mL each analyte basified with 3µL 10N KOH, then diluted with 1mL water

[B] 350µL water added per mL methanolic eluent before analysis.



G000595

*IS = Trimipramine (Internal standard)

Antidepressants (Tricyclic) From Serum Using Zymark RapidTrace SPE Workstation (SPE/GC)

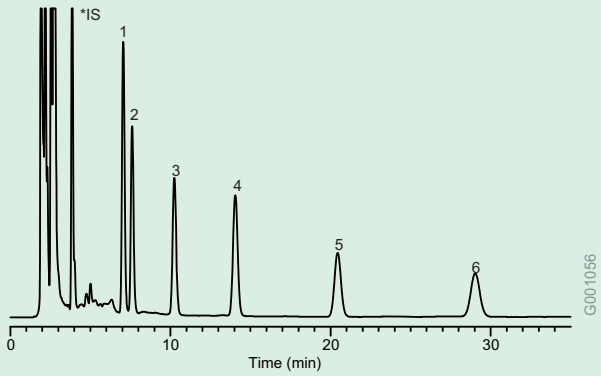
SPE Tube: Discovery DSC-18, 100mg/1mL
Cat. No.: 52602-U
HPLC Column: Discovery C18, 15cm x 4.6mm, 5µm particles, preceded by a 2cm C18 guard column and 0.5µm frit filter
Cat. No.: 504955
Mobile Phase: MeCN:MeOH:25mM KH_2PO_4 (pH 7 with triethylamine) (45:25:30)
Flow Rate: 1mL/min
Temp.: ambient
Det.: UV, 254nm
Inj.: 50µL diluted porcine serum extract

Efficiency of Recovery

Compound	Concentration (µg/mL)	%Recovery	%RSD (n=6)
1. Phenobarbital	0.5	96.2	±1.6
	1.0	94.9	±1.7
2. Aprobarbital	0.5	98.5	±2.1
	1.0	100.8	±0.8
3. Butabarbital	0.5	97.2	±1.9
	1.0	98.7	±1.8
4. Mephobarbital	0.5	99.7	±2.4
	1.0	101.0	±2.0
5. Pentobarbital	0.5	96.4	±1.7
	1.0	96.4	±1.9
6. Secobarbital	0.5	98.2	±1.7
	1.0	97.7	±1.8

SPE Method For RapidTrace SPE Workstation Application

1. Condition & equilibrate each tube/well with 2mL MeOH & 2mL DI Water
2. Load sample
3. Wash each tube/well with 2mL 5% MeOH
4. Vacuum or air dry with for 5-10 min
   This removes any excess water from the sorbent. The presence of water in the final eluent may prolong eluent evaporation.
5. Elute with 1-2mL MeOH
6. Dry eluate with nitrogen purge (40ºC; 15-20 min)
7. Reconstitute with 200µL mobile phase
8. Quantify against internal or external standards via HPLC analyses



G001056

Barbiturates from serum using 500mg/3mL Discovery DSC-18Lt SPE tubes and Zymark's RapidTrace SPE Workstation. *IS = Barbital (internal standard).

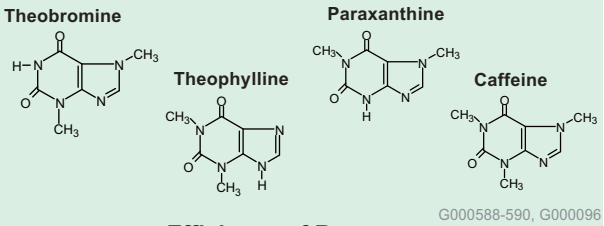
Sample Info: 0.5mL porcine serum spike with 0.5µg/mL or 1.0µg/mL each analyte then diluted with 0.5mL water.

Barbituates From Serum Using Zymark RapidTrace SPE Workstation (SPE/HPLC)

SPE Tube: Discovery DSC-18Lt, 500mg/3mL
Cat. No.: 52613-U
HPLC Column: Discovery C18, 15cm x 4.6mm, 5µm particles, preceded by a 2cm C18 guard column and 0.5µm frit filter
Cat. No.: 504955
Mobile Phase: MeOH/H_2O (40:60)
Flow Rate: 1mL/min
Temp.: 30°C
Det.: UV, 214nm
Inj.: 30µL diluted porcine serum extract

Sample Preparation Applications

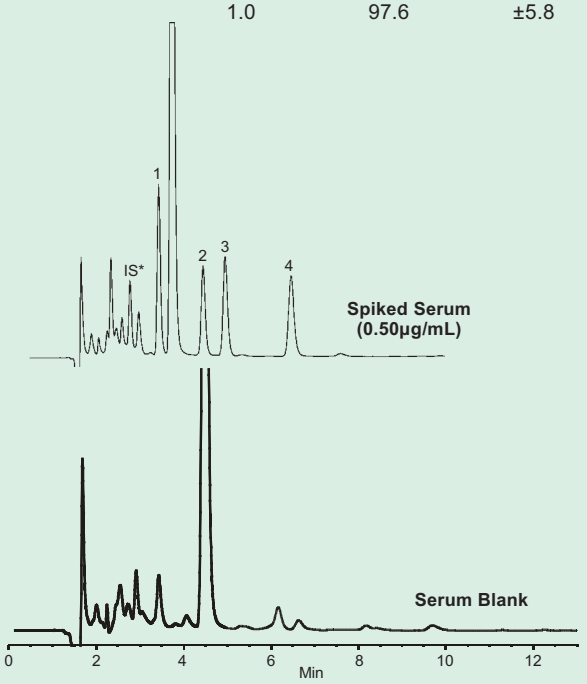
Drugs



G000588-590, G000096

Efficiency of Recovery

Compound	Concentration (µg/mL)	%Recovery	%RSD (n=6)
1. Theobromine	0.1	97.4	±6.8
	0.5	96.4	±8.5
	1.0	96.1	±5.0
2. Paraxanthine	0.1	96.2	±8.4
	0.5	95.2	±8.7
	1.0	95.0	±8.7
3. Theophylline	0.1	97.8	±8.5
	0.5	97.8	±8.8
	1.0	98.5	±5.7
4. Caffeine	0.1	98.8	±3.9
	0.5	95.6	±6.7
	1.0	97.6	±5.8



G000593, G000594

*IS = 7-Methylxanthine (internal standard)

Bronchodilator: Theophylline and Other Caffeine Metabolites from Serum (SPE/HPLC)

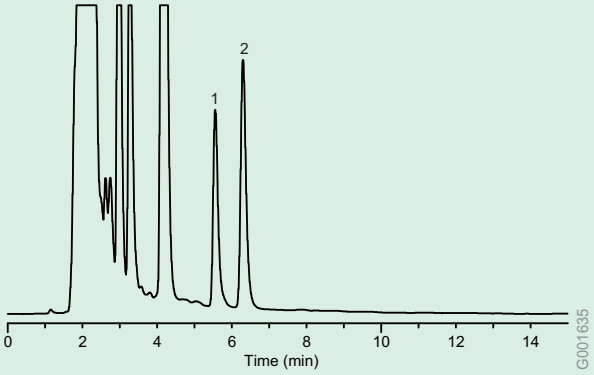
SPE Tube: Discovery DSC-18, 500mg/3mL
Cat. No.: 52603-U
Condition: 2mL methanol, then 2mL water
Apply Sample: 1mL porcine serum spiked with 0.1µg/mL, 0.50µg/mL, or 1.0µg/mL each analyte
Wash and Dry: 2mL 5% methanol in water; dry tube 10 min with nitrogen stream
Elute: 1mL methanol; evaporate to dryness with nitrogen stream at room temperature; reconstitute in 200µL mobile phase containing 0.2µg/mL or 7-methylxanthine (IS)
Column: Discovery RP-AmideC16, 15cm x 4.6mm, 5µm particles, preceded by a 2cm RP-AmideC16 guard column and 0.5µm frit filter
Cat. No.: 505013
Mobile Phase: methanol:1% acetic acid (17:38)
Flow Rate: 1mL/min
Temp.: 30°C
Det.: UV, 272nm
Inj.: 20µL reconstituted porcine serum extract

Efficiency of Recovery

Compound (µg/mL)	Discovery DSC-SCX (n=3) % Recovery	%RSD	Leading Competitor SCX (n=2) %Recovery	%RSD
1. 3-methylpyrazole (1.0)	89.4	±10.2%	67.1	±20%
2. 4-methylpyrazole (1.0)	79.4	±6.8%	50.5	±30%

SPE Procedure

1. Condition & equilibrate with 2mL MeOH & 2mL DI water.
2. Load 1mL urine sample spiked with 1µg/mL of each analyte.
3. Wash with 2mL DI water.
4. Elute with 2mL 5% MeOH in 250mM phosphate buffer, pH 7.4.
5. Quantify against external standards via HPLC analyses.

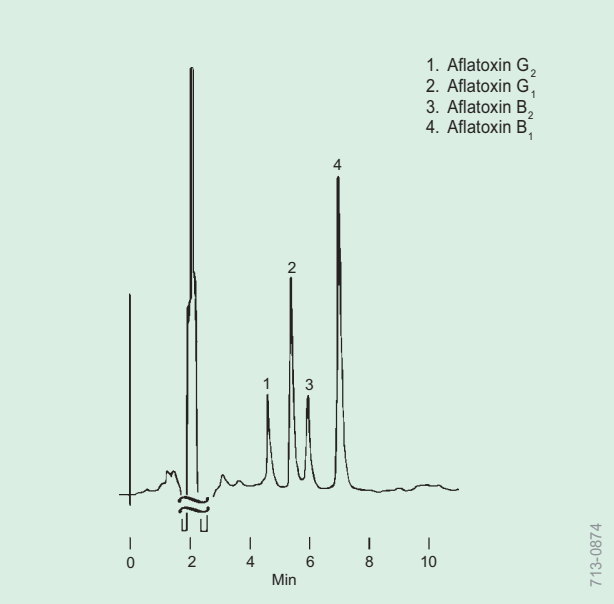


G001635

Competitor Comparison of 3-methylpyrazole and 4-methylpyrazole From Urine Using Discovery DSC-SCX (SPE/HPLC)

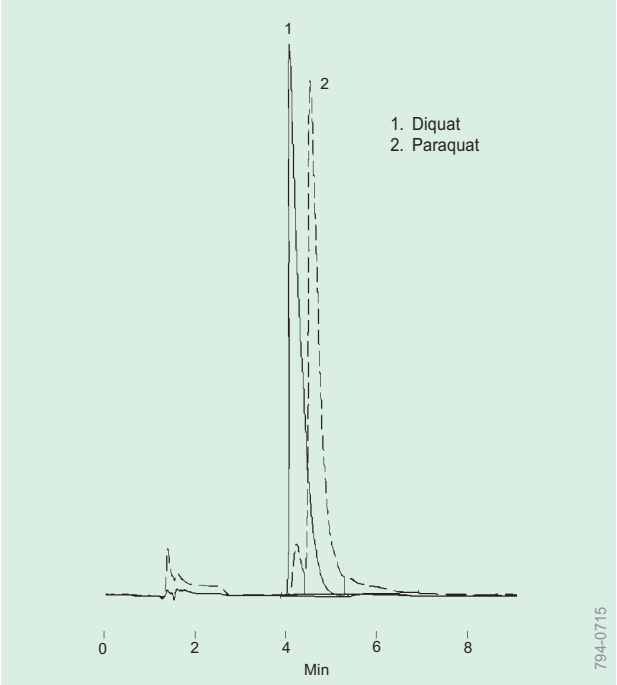
SPE Tube: Discovery DSC-SCX, 500mg/3mL
Cat. No.: 52686-U
HPLC Column: Discovery C18, 15cm x 4.6mm, 5µm particle, preceded by a 2cm guard column and 0.5µm frit filter
Cat. No.: 504955
Mobile Phase: MeOH:5mM phosphate buffer, pH 6 (20:80)
Flow Rate: 1mL/min
Temp.: 30°C
Det.: UV, 220nm
Inj.: 25µL diluted urine extract

Sample Preparation Applications
Mycotoxins, Herbicides



Aflatoxins (SPE/HPLC)

Sample:	cornmeal spiked with aflatoxins (30ppb G_2 and B_2, 100ppb G_1 and B_1) Blend 50g sample for 1 min in 100mL methanol:water (8:2) and filter.
Extraction Tube:	Supelclean LC-CN, 500mg/3mL
Cat. No.:	57013
Conditioning:	2mL 0.5% aqueous acetic acid
Sample Addition:	1mL filtered extract + 4mL 0.5% aqueous acetic acid
Washing:	500µL 20% THF in 0.5% aqueous acetic acid, then 2mL hexane. Dry packing under nitrogen. 3mL 25% THF in hexane. Dry packing 1 min under nitrogen.
Elution:	2 x 2mL 1% THF in methylene chloride. Evaporate eluate to dryness under nitrogen. Reconstitute with 100µL of methanol, then dilute with 100µL of 0.5% aqueous acetic acid.
Column:	SUPELCOSIL LC-18, 25cm x 4.6mm ID, 5µm particles (with guard column)
Cat. No.:	58298
Mobile Phase:	methanol:acetonitrile:water (22.5:22.5:55)
Flow Rate:	1.5mL/min
Det.:	VIS, 365nm
Inj.:	100µL

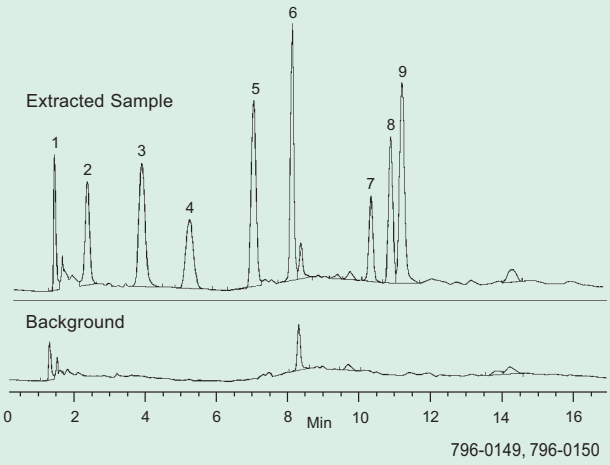


Paraquat and Diquat (SPE/HPLC)

Refer to US EPA Method 549.1 for full details.

Sample:	250mL drinking water, adjust sample pH to 10.5 ± 0.2 with sodium hydroxide solution (10% w/v) or hydrochloric acid solution (10% v/v)
Extraction Disk:	ENVI-8 DSK, 47mm
Cat. No.:	57172
Conditioning:	10mL methanol 2 x 10 mL reagent water 10mL conditioning solvent A (0.5g cetyl trimethyl ammonium bromide and 5mL conc. ammonium hydroxide in 500mL water, dilute to 1L) 2 x 10mL reagent water 10mL conditioning solvent B (10.0g hexanesulfonic acid, sodium salt and 10mL ammonium hydroxide in 250mL deionized water, dilute to 500mL)
Sample Addition:	adjust vacuum to flow rate of 100mL/min
Extraction:	0.5 to 1.0mL methanol (to cover disk) 2 x 4mL eluting solution (13.5mL orthophosphoric acid and 10.3mL diethylamine in 500mL water, dilute to 1L)
Column:	SUPELCOSIL LC-18, 15cm x 4.6mm ID, 5µm particles
Cat. No.:	58230-U
Mobile Phase:	3.5mL triethylamine and 1.0g 1-hexane-sulfonic acid, sodium salt to 800mL deionized water add orthophosphoric acid to pH = 2.5, dilute to 1L
Flow Rate:	1.0mL/min
Temp.:	35°C
Det.:	Photodiode array, quantify Diquat -308nm, Paraquat -257nm
Inj.:	100µL

Sample Preparation Applications
Herbicides

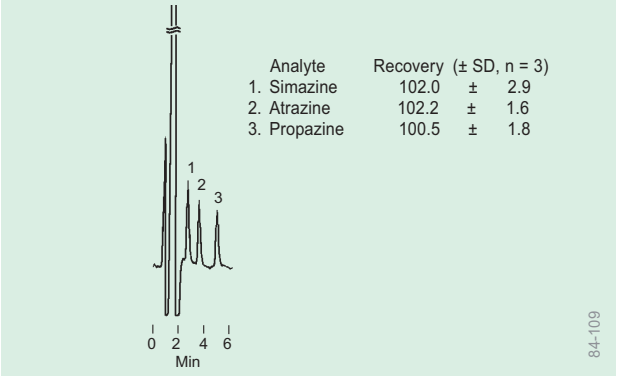


796-0149, 796-0150

Figures provided by A. Lichtman, Nassau County Dept. of Health, Hempstead, New York, USA. Request Application Note No. T196100.

Acidic Herbicides in Water (SPE/HPLC)

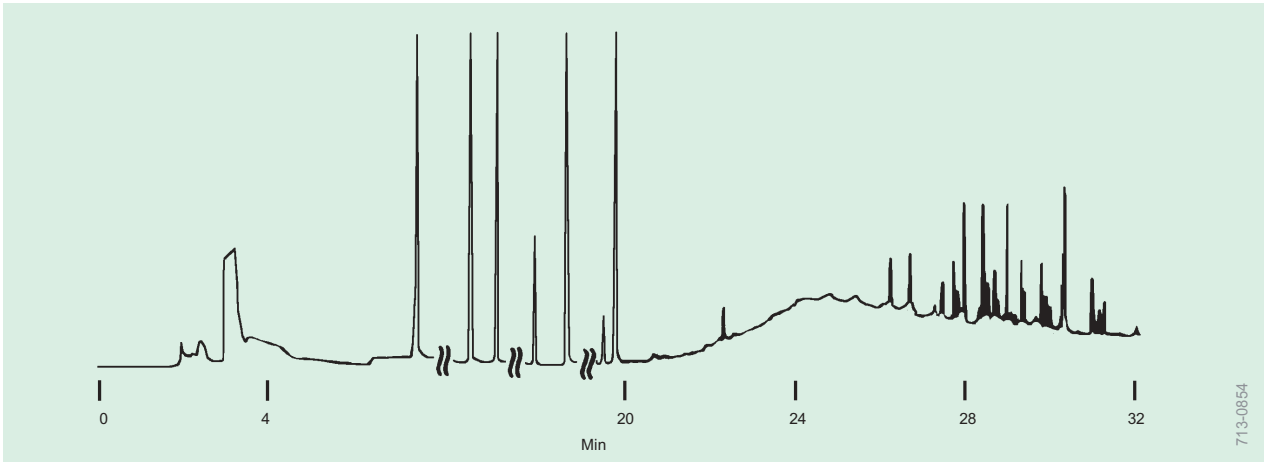
Extraction Tube:	ENVI-Carb, 250mg/6mL
Cat. No.:	57092
Column:	polymeric-coated silica-based PAH specialty column, 20cm x 3mm ID, 5µm particles
Supelco Equivalent:	SUPELCOSIL LC-PAH (available on request)
Mobile Phase:	gradient, A = water/0.05% H_3PO_4, B = acetonitrile
Temp.:	50°C
Flow Rate:	0.5mL/min
Det.:	photodiode array: peak width — 0.053 min sampling interval — 0.320 sec, monitor 210nm & 225nm
Inj.:	10µL of extract (4-5ppb each analyte in water)



Triazine Herbicides from Grass (SPE/HPLC)

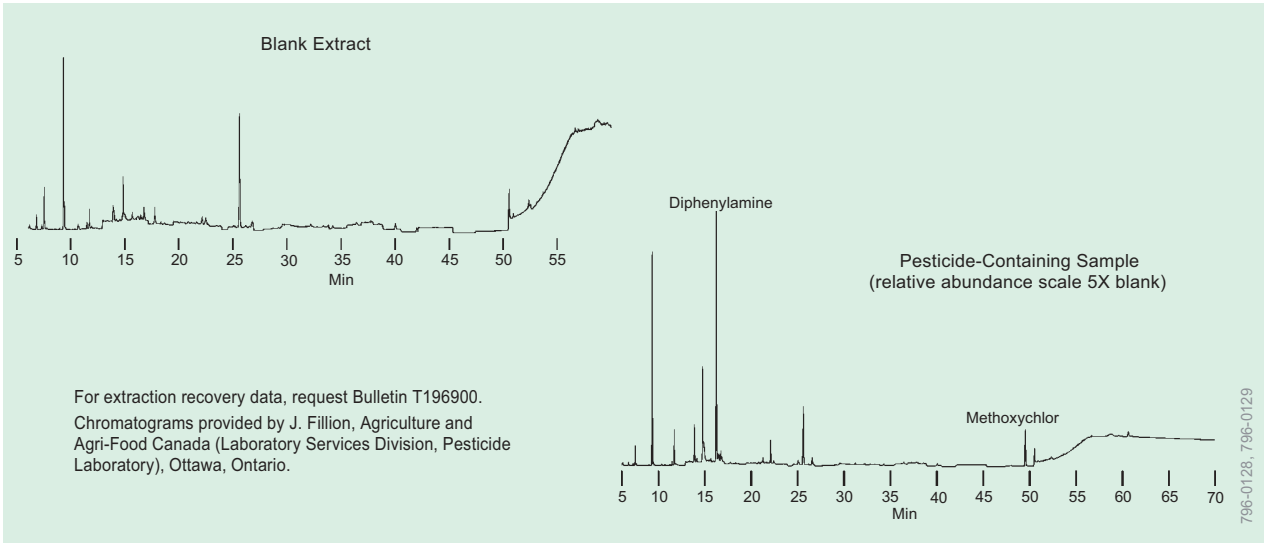
Sample:	5g fresh grass clippings spiked with 2ppm each herbicide. Add 4g anhydrous sodium sulfate and 20mL methylene chloride:acetone (80:20) Shake 20 min and allow mixture to stand 1 min
Extraction Tube:	Supelclean LC-SCX, 500mg/3mL
Cat. No.:	57018
Conditioning:	1mL methylene chloride
Sample Addition:	2mL grass extract
Washing:	2 x 2mL acetonitrile Dry packing for 5 min under nitrogen2 x 2mL deionized water
Elution:	1.5mL methanol Dilute to 2mL with deionized water.
Column:	SUPELCOSIL LC-8-DB, 15cm x 4.6mm ID, 5µm particles *
Cat. No.:	58347
Mobile Phase:	acetonitrile:water (45:55)
Flow Rate:	1.5mL/min
Det.:	UV, 254nm
Inj.:	100µL

* With Supelguard LC-8-DB column, 2.0cm x 4.6mm ID, 5µm particles



PCB (SPE/GC)

Sample:	used transformer oil containing 50ppb Aroclor 1254
Extraction Tube:	Supelclean LC-Florisil, 1.0g/6mL
Cat. No.:	57057
Extraction Tube:	Supelclean LC-Si, 1.0g/6mL
Cat. No.:	57051
	Connect tubes in series, LC-Florisil on top
Conditioning:	500µL isooctane
Sample Addition:	0.2g, weigh onto top of frit of tube
Drying:	none
Elution:	5 x 2mL isooctane, up to 10 mL in volumetric flask
Column:	SPB-5, 30m x 0.32mm ID, 0.25µm film
Cat. No.:	24048
Oven:	40°C (4 min) to 300°C at 10°C/min, hold 5 min
Carrier:	nitrogen
Det.:	ECD
Inj.:	1µL splitless (30 sec delay), then split (50:1)



For extraction recovery data, request Bulletin T196900.

Chromatograms provided by J. Fillion, Agriculture and Agri-Food Canada (Laboratory Services Division, Pesticide Laboratory), Ottawa, Ontario.

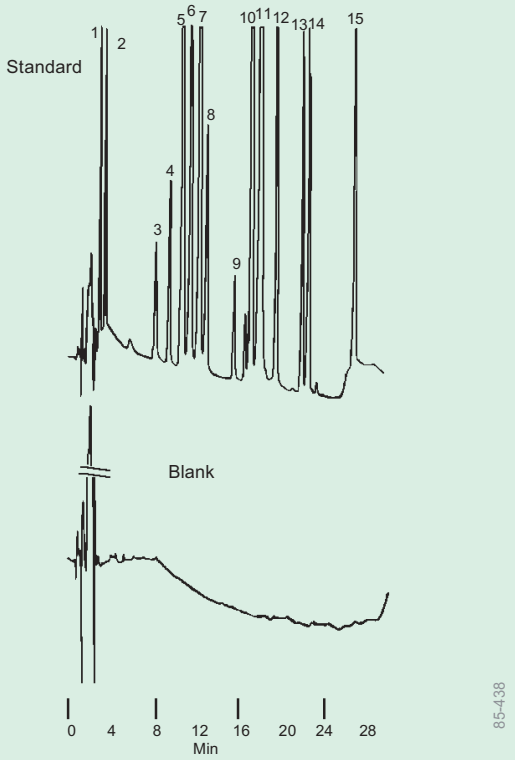
Pesticides in Fruits and Vegetables (SPE/GC)

Sample:	homogenize 50g sample in 100mL acetonitrile then add 10g NaCl and homogenize 5min
Extraction Tube:	ENVI-Carb, 500mg/6mL
Cat. No.:	57094
Extraction:	Centrifuge 13mL of acetonitrile layer at high speed for 5 min. Evaporate 10mL aliquot to 0.5mL under nitrogen at 35° C. Transfer sample to SPE tube. Elute pesticides with 20mL acetonitrile:toluene (3:1). Concentrate to 2mL by rotary evaporation. Add 2 x 10mL acetone, co ncentrating material to 2mL after each addition. Add 50µL cis-chlordane in acetone (500ng/µL) then dilute to 2.5mL with acetone.
Supelco Equivalent:	SPB-1701 (available on request)
Column:	14% cyanopropylphenyl/86% dimethylsiloxane, 30m x 0.25mm ID, 0.15µm film
Oven:	70°C (hold 2 min) to 130°C at 25°C; 130°C to 220°C at 2°C/min; 220°C to 280°C at 10°C/min and hold 4.6 min
Carrier:	helium
Det.:	MSD, 285°C
Inj.:	2µL, splitless

Sample Preparation Applications

Pesticides

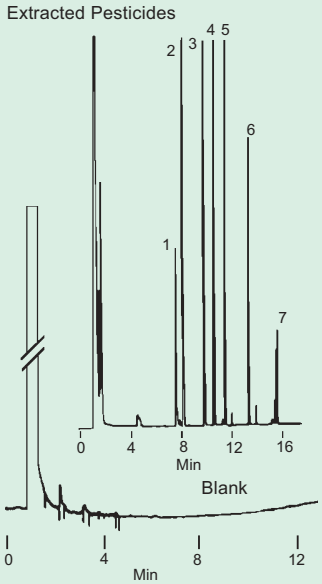
	Analyte	% Recovery (± RSD, n = 5)
1.	Oxamyl	111 ± 9.6
2.	Methomyl	105 ± 5.0
3.	N-1-Naphthylthiourea	—
4.	Aldicarb	92 ± 0.8
5.	Simazine	91 ± 6.5
6.	Monuron	99 ± 3.2
7.	Cyanazine	90 ± 5.4
8.	Metribuzin	97 ± 3.9
9.	Carbofuran	106 ± 6.2
10.	Atrazine	89 ± 5.7
11.	Carbaryl	97 ± 3.5
12.	Diuron	88 ± 5.7
13.	Propham	95 ± 3.2
14.	Propachlor	96 ± 3.8
15.	Linuron	88 ± 5.4



Nonvolatile Pesticides (SPE/HPLC)

Sample: water spiked with pesticides (10-50µg/L each component)
Extraction Tube: Supelclean ENVI-Carb, 250mg/3mL
Cat. No.: 57088
Conditioning: 5mL methylene chloride:methanol (80:20)
1mL methanol
10mL 2% acetic acid in water
Keep bed moist until sample is added.
Sample Addition: 100mL, 5mL/min
Drying: 1 min with vacuum suction
Elution: 0.8mL methanol
2 x 3.5mL methylene chloride:methanol (80:20)
Dry eluate to 500µL under gentle stream of nitrogen
Reconstitute to 1mL with methanol.
Column: SUPELCOSIL LC-18-DB, 25cm x 4.6mm ID, 5µm particles
Cat. No.: 58355-U
Mobile Phase: A = water:acetonitrile (90:10), B = acetonitrile
80% A for 5 min then to 30% A over 30 min
Flow Rate: 1.5mL/min
Det.: UV, 220nm
Inj.: 20µL

	Analyte	% Recovery (± CV)
1.	Hexachlorobenzene	87 ± 11
2.	γ-BHC (Lindane)	99 ± 13
3.	Heptachlor	96 ± 12
4.	Aldrin	94 ± 13
5.	Heptachlor epoxide	98 ± 13
6.	Endrin	93 ± 11
7.	Methoxychlor	110 ± 13

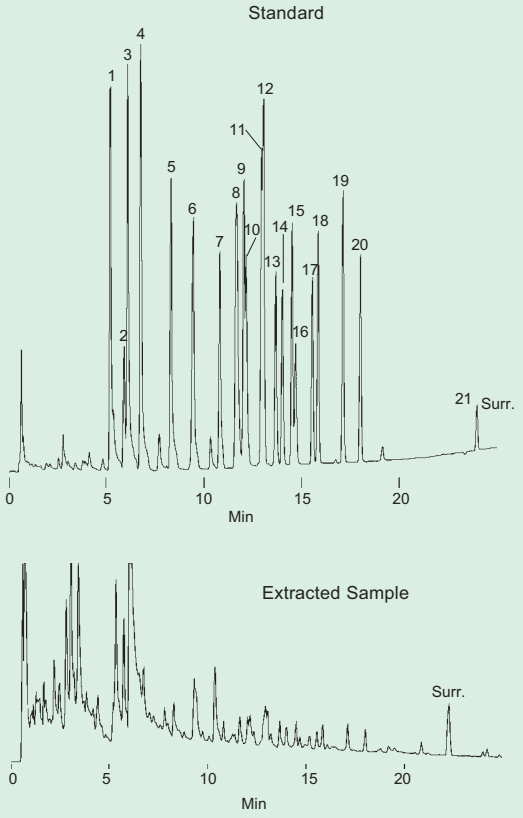


Chlorinated Pesticides (SPE/GC)

Sample: drinking water spiked with pesticides
Extraction Tube: Supelclean ENVI-18, 500mg/6mL
Cat. No.: 57064
Conditioning: 2 x 6mL hexane:ethyl ether (1:1)
6mL methanol
6mL deionized water
Sample Addition: 250mL, 10mL/min
Drying: 10 min
Elution: 2 x 1.5mL hexane:ethyl ether (1:1) Concentrate eluate to 2mL under stream of nitrogen.
Column: PTE-5, 30m x 0.25mm ID, 0.25µm film
Cat. No.: 24135-U
Oven: 150°C (2 min) to 275°C at 10°C/min
Carrier: helium
Det.: ECD, 310°C
Inj.: 1µL

Sample Preparation Applications
Pesticides, Phenols

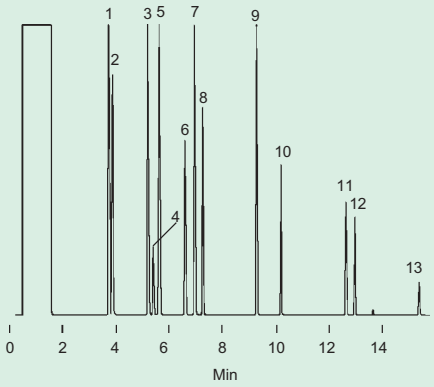
1. α-BHC
2. β-BHC
3. γ-BHC (Lindane)
4. δ-BHC
5. Heptachlor
6. Aldrin
7. Heptachlor epoxide
8. γ-Chlordane
9. Endosulfan I
10. α-Chlordane
11. Dieldrin
12. 4,4'-DDE
13. Endrin
14. Endosulfan II
15. 4,4'-DDD
16. Endrin aldehyde
17. Endosulfan sulfate
18. 4,4'-DDT
19. Endrin ketone
20. Methoxychlor
21. Decachlorobiphenyl (Surr.)



Chlorinated Pesticides in Hazardous Waste (SPE/GC)

Sample:	100mL aqueous hazardous waste, adjust pH to 5-7 if necessary, add 5mL methanol
Extraction Tube:	ENVI-8, glass, 500mg/6mL
Cat. No.:	57107 (0.5g) or 57108 (1g)
Conditioning:	3mL methanol, (do not allow bed to dry out)
	2mL 5% methanol in water
Sample Addition:	adjust vacuum to flow rate of 5mL/min
Dry:	purge tube with nitrogen for 2-3 min (use Visidry attachment)
Extraction:	2 x 4mL hexane:acetone (90:10), allow to soak, elute dropwise
Column:	PTE-5 QTM, 15m x 0.53mm ID, 0.5µm film
Cat. No.:	25355
Oven:	150°C (0.5min) to 275°C (5min)
Carrier:	helium
Det.:	ECD, 300°C
Inj.:	1µL, 200°C, split/splitless (45 sec delay)

	Analyte	% Recovery	(± CV)
1.	Phenol	101.8	± 3.7
2.	2-Chlorophenol	104.7	± 1.7
3.	2-Methylphenol	107.0	± 1.9
4.	2-Bromophenol (Int. Std.)		—
5.	3-Methylphenol	104.9	± 1.6
6.	2-Nitrophenol	96.3	± 2.8
7.	2,4-Dimethylphenol	105.3	± 2.2
8.	2,4-Dichlorophenol	106.3	± 2.2
9.	4-Chloro-3-methylphenol	104.6	± 2.0
10.	2,4,6-Trichlorophenol	103.9	± 2.1
11.	4-Nitrophenol	99.9	± 4.1
12.	2,3,4,6-Tetrachlorophenol	104.6	± 1.5
13.	Pentachlorophenol	97.7	± 4.8



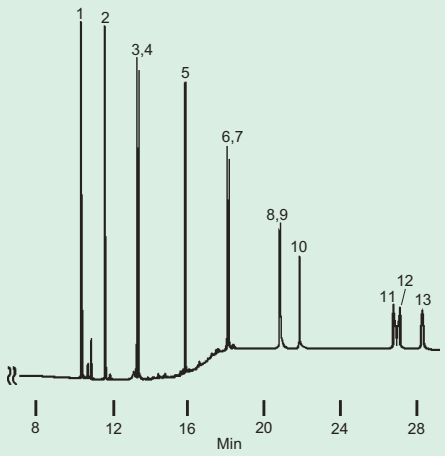
Phenols (SPE/GC)

Sample:	water spiked with phenols
Extraction Tube:	Supelclean ENVI-Chrom P, 250mg/6mL
Cat. No.:	57225-U
Conditioning:	6mL methyl t-butyl ether*
	6mL methanol
	6mL deionized water
Sample Addition:	100mL
Drying:	10 min, vacuum suction
Elution:	2mL methyl t-butyl ether,* allow to soak with vacuum off
	2mL methyl t-butyl ether,* elute dropwise
	Additional methyl t-butyl ether until 5mL of eluate is collected.
Column:	PTE-5 QTM, 15m x 0.53mm ID, 0.5µm film
Cat. No.:	25355
Oven:	65°C to 185°C at 10°C/min, hold 1 min, then to 275°C at 20°C/min, hold 5 min
Carrier:	helium
Det.:	FID, 300°C
Inj.:	1µL splitless (45 sec hold)

* Can substitute ethyl acetate.

Sample Preparation Applications

Polynuclear Aromatic Hydrocarbons, Semivolatiles

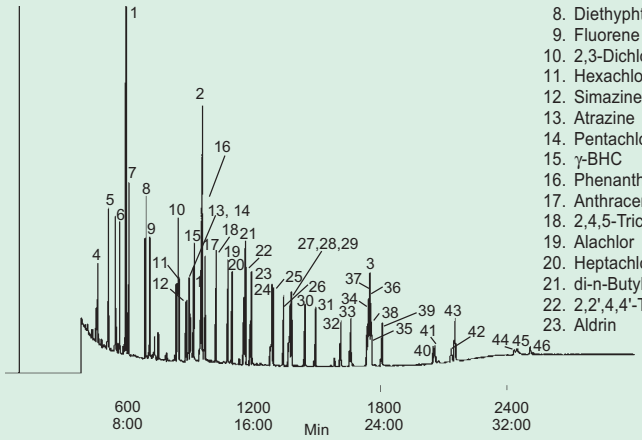


	Analyte	%Recovery(± CV)
1.	Acenaphthylene	66 ± 28
2.	Fluorene	95 ± 7.5
3.	Phenanthrene	95 ± 8
4.	Anthracene	95 ± 11
5.	Pyrene	97 ± 7.1
6.	Benzo(a)anthracene	94 ± 8.3
7.	Chrysene	101 ± 8.8
8.	Benzo(b)fluoranthene	103 ± 10
9.	Benzo(k)fluoranthene	103 ± 9.4
11.	Indeno(1,2,3-cd)pyrene	102 ± 10
10.	Benzo(a)pyrene	94 ± 11
12.	Dibenzo(a,h)anthracene	104 ± 9.7
13.	Benzo(ghi)perylene	101 ± 11

80-207

PAHs in Water (SPE/GC)

Sample: water spiked with PAHs
Extraction Tube: Supelclean ENVI-18, 500mg/6mL
Cat. No.: 57064
Conditioning: 2 x 6mL toluene:methanol (10:1), 6mL methanol, 6mL deionized water
Sample Addition: 250mL, 10mL/min
Drying: 10 min
Elution: 2 x 1mL toluene:methanol (10:1)
Column: PTE-5, 30m x 0.25mm ID, 0.25µm film
Cat. No.: 24135-U
Oven: 70°C (2 min) to 280°C at 8°C/min
Carrier: helium
Det.: FID, 310°C
Inj.: 1µL



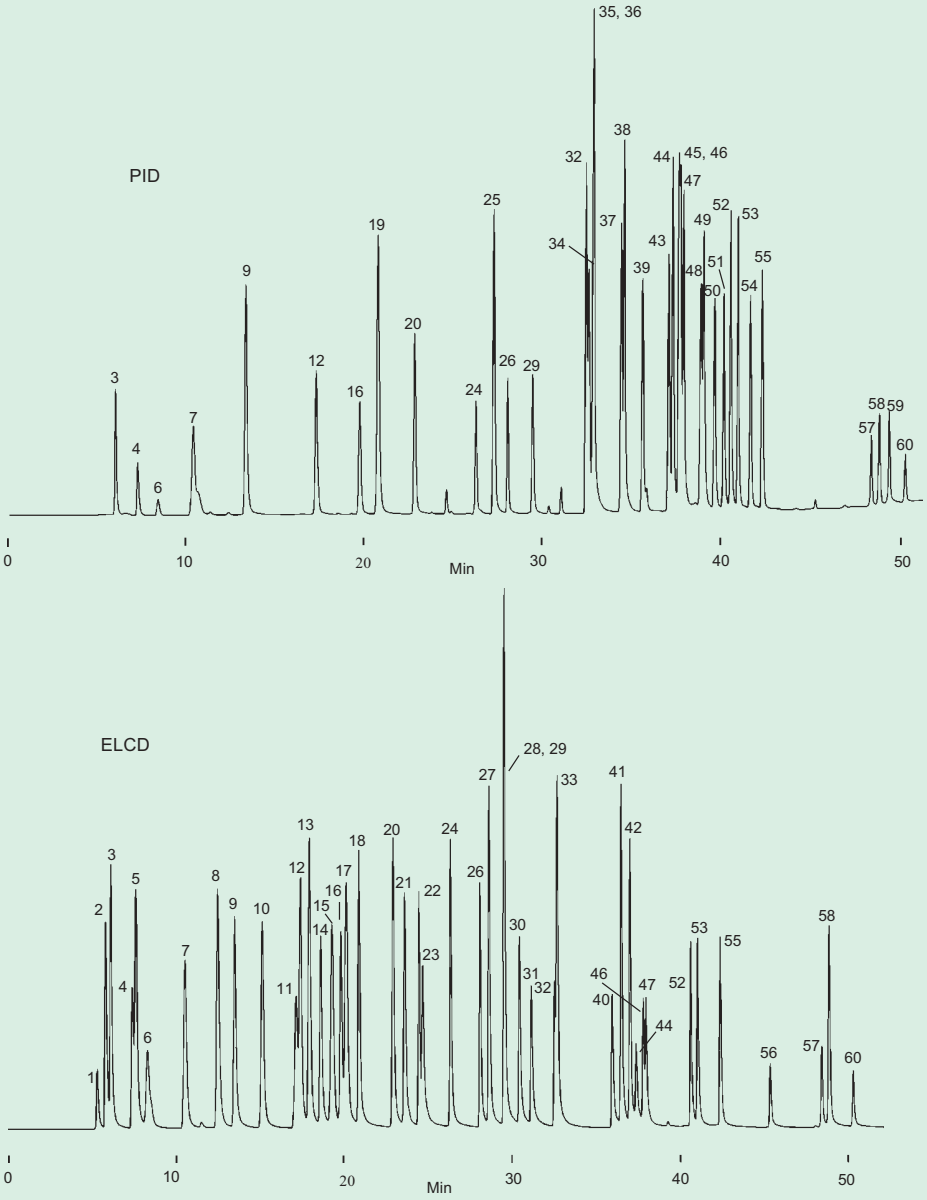
		µg/L*			µg/L*
1.	Acenapthene -d_{10}	5.0	24.	Heptachlor epoxide	2.0
2.	Phenanthrene -d_{10}	5.0	25.	2,2',3',4,6-Pentachlorobiphenyl	2.0
3.	Chrysene -d_{12}	5.0	26.	γ-Chlordane	2.0
4.	Hexachlorocyclopentadiene	2.0	27.	Pyrene	2.0
5.	Dimethylphthalate	2.0	28.	α-Chlordane	2.0
6.	Acenaphthylene	2.0	29.	trans-Nonachlor	2.0
7.	2-Chlorobiphenyl	2.0	30.	2,2',4,4',5,6'-Hexachlorobiphenyl	2.0
8.	Diethyphthalate	2.0	31.	Endrin	2.0
9.	Fluorene	2.0	32.	Butylbenzylphthalate	2.0
10.	2,3-Dichlorobiphenyl	2.0	33.	di(2-ethylhexyl)Adipate	2.0
11.	Hexachlorobenzene	2.0	34.	2,2'3,3',4,4',6-Heptachlorobiphenyl	2.0
12.	Simazine	2.0	35.	Methoxychlor	2.0
13.	Atrazine	2.0	36.	2,2'3,3',4,5',6,6'-Octachlorobiphenyl	2.0
14.	Pentachlorophenol	8.0	37.	Benz(a)anthracene	2.0
15.	γ-BHC	2.0	38.	Chrysene	2.0
16.	Phenanthrene	2.0	39.	Di(2-ethylhexyl)phthalate	2.0
17.	Anthracene	2.0	40.	Benzo(b)fluoranthene	2.0
18.	2,4,5-Trichlorobiphenyl	2.0	41.	Benzo(k)fluoranthene	2.0
19.	Alachlor	2.0	42.	Benzo(a)pyrene	2.0
20.	Heptachlor	2.0	43.	Perylene -d_{12}	5.0
21.	di-n-Butylphthalate	2.0	44.	Indeno(1,2,3 -cd)Pyrene	2.0
22.	2,2',4,4'-Tetrachlorobiphenyl	2.0	45.	Dibenz(a,h)anthracene	2.0
23.	Aldrin	2.0	46.	Benzo(ghi)perylene	2.0

749-0798

Semivolatiles (SPE/GC)

Sample: 1L drinking water, pH to <2 with 6N HCl, add 5mL methanol and mix thoroughly
Extraction Disk: ENVI-18 DSK, 47mm
Cat. No.: 57171
Conditioning: 5mL dichloromethane (pull completely through disk)/5mL methanol (do not allow disk to dry out)/5mL reagent water
Sample Addition: adjust vacuum to flow rate of 100mL/min
Extraction: rinse sample container with 2 x 5mL acetonitrile, extract disk with solution
Column: 5% diphenyl/95% dimethyl silicone capillary, 30m x 0.25mm ID, 0.25µm film
Oven: 40°C to 160°C (3 min), then to 300°C (3 min) at 6°C/min
Supelco Equivalent: Equity-5 (Cat. No. 28089-U)
Carrier: helium, 33cm/sec
Det.: MS, scan range m/z=45-450
Inj.: 1µL, split/splitless, 1min delay

1. Dichlorodifluoromethane
2. Chloromethane
3. Vinyl chloride
4. Bromomethane
5. Chloroethane
6. Trichlorofluoromethane
7. 1,1-Dichloroethylene
8. Methylene chloride
9. trans-1,2-Dichloroethylene
10. 1,1-Dichloroethane
11. 2,2-Dichloropropane
12. cis-1,2-Dichloroethylene
13. Chloroform
14. Bromochloromethane
15. 1,1,1-Trichloroethane
16. 1,1-Dichloropropane
17. Carbon tetrachloride
18. 1,2-Dichloroethane
19. Benzene
20. Trichloroethylene
21. 1,2-Dichloropropane
22. Bromodichloromethane
23. Dibromomethane
24. cis-1,3-Dichloropropene
25. Toluene
26. trans-1,3-Dichloropropene
27. 1,1,2-Trichloroethane
28. 1,3-Dichloropropane
29. Tetrachloroethylene
30. Chlorodibromomethane
31. 1,2-Dibromoethane
32. Chlorobenzene
33. 1,1,1,2-Tetrachloroethane
34. Ethylbenzene
35. m-Xylene
36. p-Xylene
37. o-Xylene
38. Styrene
39. Isopropylbenzene
40. Bromoform
41. 1,1,2,2-Tetrachloroethane
42. 1,2,3-Trichloropropane
43. n-Propylbenzene
44. Bromobenzene
45. 1,3,5-Trimethylbenzene
46. 2-Chlorotoluene
47. 4-Chlorotoluene
48. tert-Butylbenzene
49. 1,2,4-Trimethylbenzene
50. sec-Butylbenzene
51. p-Isopropyltoluene
52. 1,3-Dichlorobenzene
53. 1,4-Dichlorobenzene
54. n-Butylbenzene
55. 1,2-Dichlorobenzene
56. 1,2-Dibromo-3-chloropropane
57. 1,2,4-Trichlorobenzene
58. Hexachlorobutadiene
59. Naphthalene
60. 1,2,3-Trichlorobenzene



713-1165, 1166

Chromatograms provided courtesy of O I Analytical, College Station, TX.

Volatile Compounds by US EPA Method 502.2 (PT/GC)

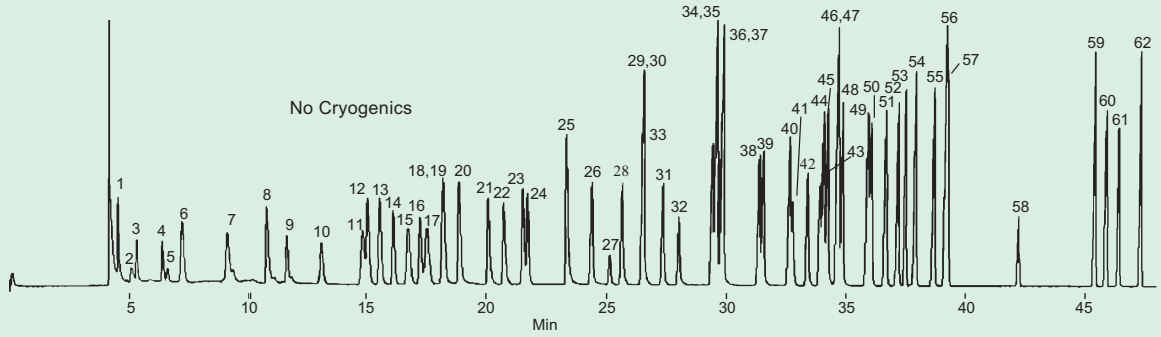
Sample: 5mL water (5ppb each analyte)
Instrument: OI Analytical Model 4560
Trap: VOCARB 3000
Cat. No.: 21131-U
Purge: 11min, at 25°C, 37mL/min
Desorption: 0.5min at 220°C

Column: VOCOL, 105m x 0.53mm ID, 3.0µm film
Cat. No.: 25358
Oven: 35°C (10 min) to 200°C at 4°C/min, hold
Carrier: helium, 8.5mL/min
Det.: ELCD (OI Model 5220)/PID(OI Model 5230) in series

Sample Preparation Applications

Volatiles

1. Dichlorodifluoromethane
2. Chloromethane
3. Vinyl chloride
4. Bromomethane
5. Chloroethane
6. Trichlorofluoromethane
7. 1,1-Dichloroethylene
8. Methylene chloride
9. trans-1,2-Dichloroethylene
10. 1,1,-Dichloroethane
11. 2,2-Dichloropropane
12. cis-1,2-Dichloroethylene
13. Chloroform
14. Bromochloromethane
15. 1,1,1-Trichloroethane
16. 1,1-Dichloropropene
17. Carbon tetrachloride
18. 1,2-Dichloroethane
19. Benzene
20. Fluorobenzene (int std)
21. Trichloroethylene
22. 1,2-Dichloropropane
23. Bromodichloromethane
24. Dibromomethane
25. cis-1,3-Dichloropropene
26. Toluene
27. trans-1,3-Dichloropropene
28. 1,1,2-Trichloroethane
29. 1,3-Dichloropropane
30. Tetrachloroethylene
31. Chlorodibromomethane
32. 1,2-Dibromoethane
33. Chlorobenzene
34. 1,1,1,2-Tetrachloroethane
35. Ethylbenzene
36. m-Xylene
37. p-Xylene
38. o-Xylene
39. Styrene
40. Isopropylbenzene
41. Bromoform
42. 1,1,2,2-Tetrachloroethane
43. 1,2,3-Trichloropropane
44. n-Propylbenzene
45. Bromobenzene
46. 1,3,5-Trimethylbenzene
47. 2-Chlorotoluene
48. 4-Chlorotoluene
49. tert-Butylbenzene
50. 1,2,4-Trimethylbenzene
51. sec-Butylbenzene
52. p-Isopropyltoluene
53. 1,3-Dichlorobenzene
54. 1,4-Dichlorobenzene
55. n-Butylbenzene
56. 1,2-Dichlorobenzene-d_4 (int std)
57. 1,2-Dichlorobenzene
58. 1,2-Dibromo-3-chloropropane
59. 1,2,4-Trichlorobenzene
60. Hexachlorobutadiene
61. Naphthalene
62. 1,2,3-Trichlorobenzene

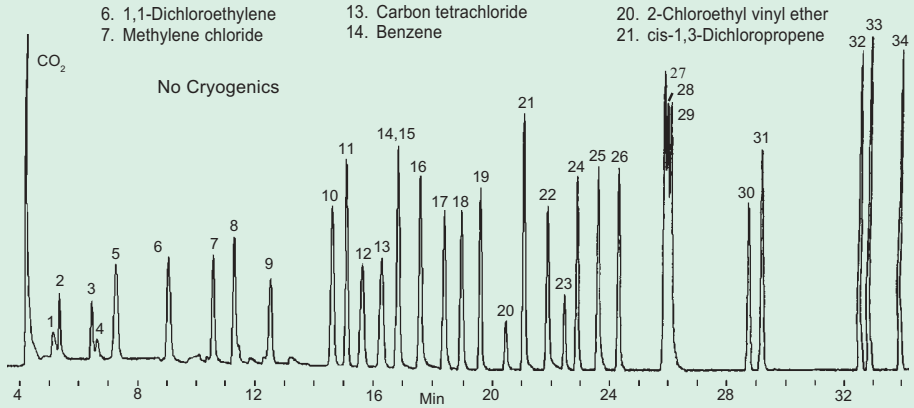


Volatile Compounds by US EPA Method 524.2 (PT/GC)

Sample: 10ppb each component in 5mL water
Trap: VOCARB 3000
Cat. No.: 21066-U
Purge: 11min, 40mL/min
Dry: 3 min
Desorb. Temp: 250°C for 4 min
Bake: 280°C for 10 min

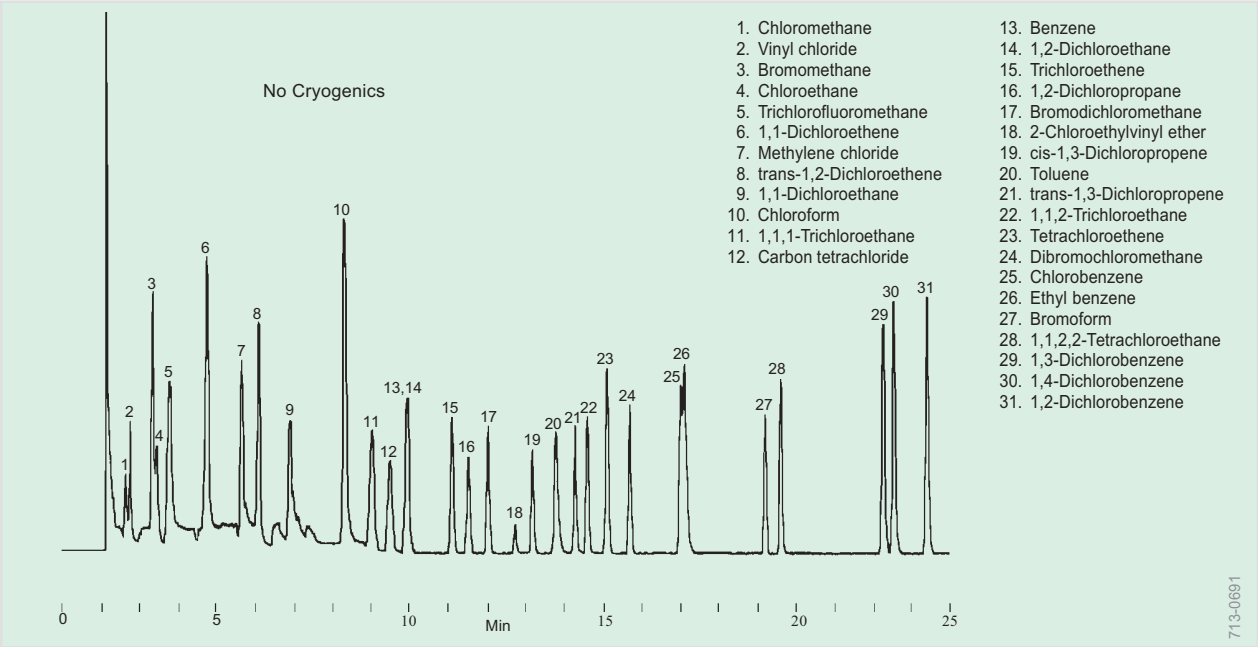
Column: VOCOL, 105m x 0.53mm ID, 3.0µm film
Cat. No.: 25358
Oven: 35°C (10 min) to 200°C at 4°C/min, hold 10 min
Carrier: helium, 10mL/min
Det.: MS, Scan Range m/z = 35-260 at 0.6 sec/scan

1. Chloromethane
2. Vinyl chloride
3. Bromomethane
4. Chloroethane
5. Trichlorofluoromethane
6. 1,1-Dichloroethylene
7. Methylene chloride
8. trans-1,2-Dichloroethylene
9. 1,1,-Dichloroethane
10. Chloroform
11. Bromochloromethane (IS)
12. 1,1,1-Trichloroethane
13. Carbon tetrachloride
14. Benzene
15. 1,2-Dichloroethane
16. Difluorobenzene (IS)
17. Trichloroethylene
18. 1,2-Dichloropropane
19. Bromodichloromethane
20. 2-Chloroethyl vinyl ether
21. cis-1,3-Dichloropropene
22. Toluene
23. trans-1,3-Dichloropropene
24. 1,1,2-Trichloroethane
25. Tetrachloroethylene
26. Chlorodibromomethane
27. Chlorobenzene-d_6 (IS)
28. Chlorobenzene
29. Ethylbenzene
30. Bromoform
31. 1,1,2,2-Tetrachloroethane
32. 1,3-Dichlorobenzene
33. 1,4-Dichlorobenzene
34. 1,2-Dichlorobenzene



Volatile Compounds by US EPA Method 624 (PT/GC)

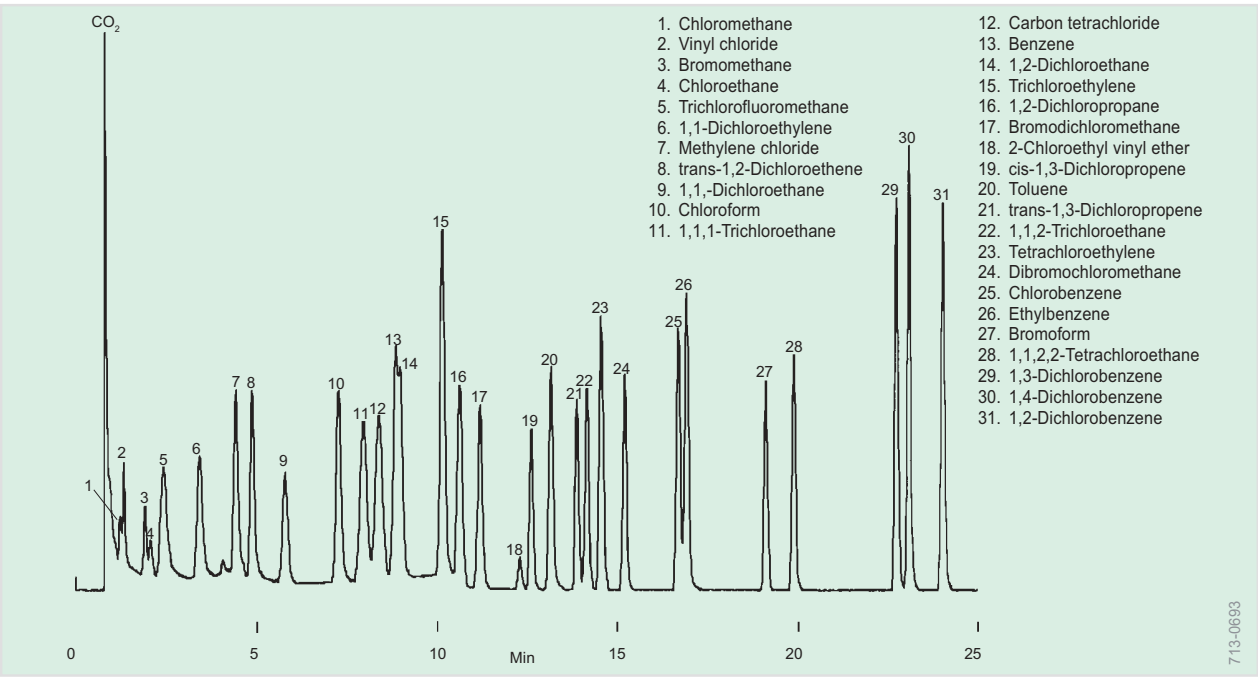
Sample: 20ppb each component in 5mL water
Trap: VOCARB 3000
Cat. No.: 21066-U
Purge: 11 min, 35mL/min
Dry Purge: 3 min
Desorb. Temp: 250°C for 4 min
Bake: 60°C for 10 min
Column: VOCOL, 105m x 0.53mm ID, 3.0µm film
Cat. No.: 25358
Oven: 35°C (4 min) to 200°C at 6°C/min
Carrier: helium, 7.5mL/min
Det.: MS, Scan Range m/z = 35-260 at 0.6 sec/scan



Volatile Compounds by US EPA Method 624 (PT/GC)

Sample: 20ppb each component in 5mL water
Trap: VOCARB 3000
Cat. No.: 21066-U
Purge: 11min, 35mL/min
Dry Purge: 3 min
Desorb.: 250°C for 4 min
Bake: 260°C for 10 min

Column: VOCOL, 60m x 0.53mm ID,3.0µm film
Cat. No.: 25381
Oven: 35°C (4 min) to 200°C at 6°C/min
Carrier: helium, 7.5mL/min
Det.: MS, Scan Range m/z = 35-260 at 0.6 sec/scan



Volatile Compounds by US EPA Method 624 (PT/GC)

Sample: 20ppb each componentin 5mL water
Trap: VOCARB 3000
Cat. No.: 21066-U
Purge: 11min, 40mL/min
Dry Purge: 3 min
Desorb.: 250°C for 4 min
Bake: 280°C for 10 min

Column: VOCOL, 30m x 0.53mm ID, 3.0µm film
Cat. No.: 25320-U
Oven: 5°C (2 min) to 200°Cat 5°C/min
Carrier: helium, 7.5mL/min
Det.: MS, Scan Range m/z = 35-260 at 0.6 sec/scan