

APPLICATIONS

Extraction and Analysis of Pentachlorophenol from Ground Water Utilizing Strata[®]-X Solid Phase Extraction and a Kinetex[®] 2.6µm Polar C18 Column

Shahana W. Huq and Simon Lomas
Phenomenex, Inc., 411 Madrid Ave., Torrance, CA 90501 USA

Overview/Summary

Pentachlorophenol (PCP) is a toxic substance, identified as an endocrine disruptor. It exists in the environment due to its wide use as an insecticide, pesticide, and wood preservative. Additionally, it can also be formed from phenol and chlorine during the disinfection process of drinking water. We utilized a simple solid phase extraction (SPE) method to clean up the ground water sample to isolate low level pentachlorophenol using Strata-X polymeric SPE. A high efficiency Kinetex 2.6 µm Polar C18 core-shell HPLC/UHPLC column was utilized for analysis due to its enhanced polar retention.

Figure 1.
Pentachlorophenol

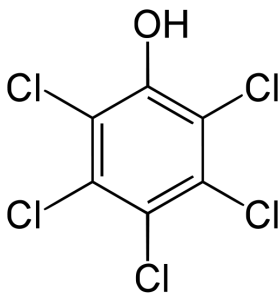
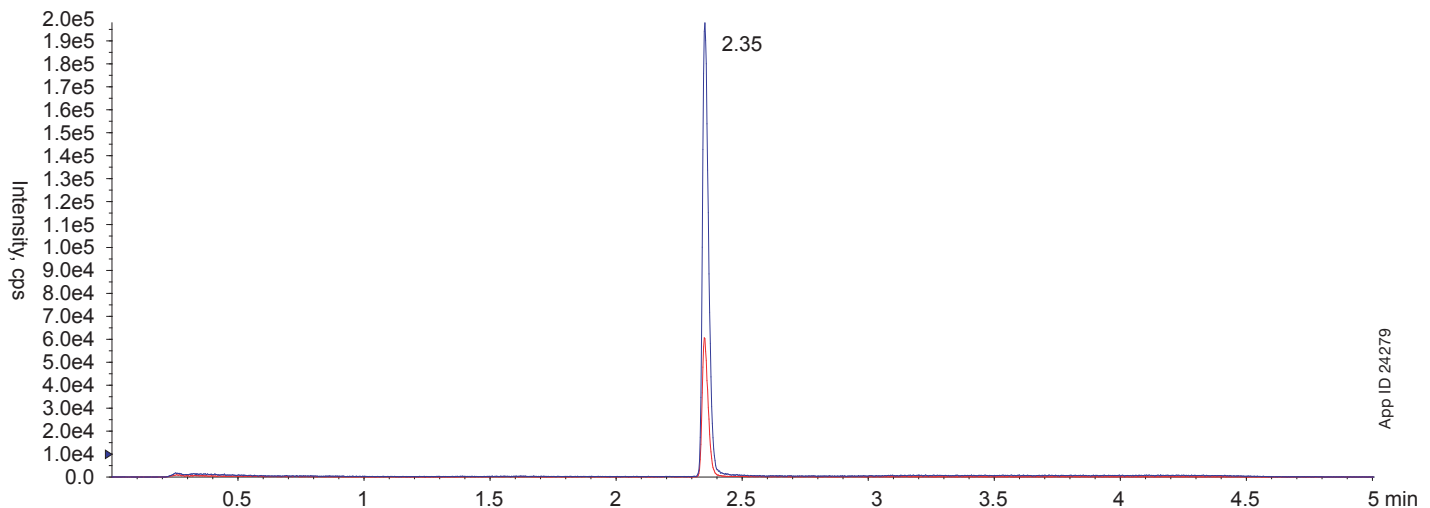


Figure 2.
TIC of Extracted PCP from ground water on a Kinetex 2.6 µm Polar C18 Column



% Absolute Recovery of PCP from Ground Water (N=2)

Analyte	RT (min)	% Recovery
PCP	2.35	104%

SPE Protocol

Cartridge: Strata-X 200 mg/12 mL
Part No.: 8B-S100-FDG-T
Condition: 4 mL Methanol
Equilibration: 4 mL 0.1% Formic Acid
Load: 250 mL of ground water spiked with 0.5 µg/L of pentachlorophenol at the flow rate of 10-15 mL/min
Wash: 4 mL 0.1% Formic Acid in Water
Dry: 5-6 minutes under high vacuum (15-20" Hg)
Elute: 2 x 3 mL Methanol (2 aliquots of 3 mL)
Inject: Direct injection on LC-MS/MS (no need to dry down and reconstitute)

LC-MS/MS Conditions

Column: Kinetex 2.6µm Polar C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4759-AN
Mobile Phase: A: 10 mM Ammonium Formate (pH 6.9)
 B: Methanol
Gradient:

Time (min)	% B
0	30
2	95
3.5	95
3.51	30
5	30

Flow Rate: 500 µL/min
Temperature: Ambient
Injection: 5 µL
Detection: MS/MS (SCIEX Triple Quad[™] 5000, ESI-)
Sample: Pentachlorophenol

APPLICATIONS

Kinetex® Ordering Information

2.6 µm Minibore Columns (mm)					SecurityGuard™ ULTRA Cartridges†
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	3/pk
Polar C18	00A-4759-AN	00B-4759-AN	00D-4759-AN	00F-4759-AN	AJ0-9532 for 2.1 mm ID

2.6 µm MidBore™ Columns (mm)				SecurityGuard ULTRA Cartridges†
Phases	50 x 3.0	100 x 3.0	150 x 3.0	3/pk
Polar C18	00B-4759-Y0	00D-4759-Y0	00F-4759-Y0	AJ0-9531 for 3.0 mm ID

2.6 µm Analytical Columns (mm)				SecurityGuard ULTRA Cartridges†
Phases	50 x 4.6	100 x 4.6	150 x 4.6	3/pk
Polar C18	00B-4759-E0	00D-4759-E0	00F-4759-E0	AJ0-9530 for 4.6 mm ID

† SecurityGuard ULTRA Cartridges require holder, Part No.: AJ0-9000.

Australia
t: +61 (0)2-9428-6444
f: +61 (0)2-9428-6445
auinfo@phenomenex.com

Austria
t: +43 (0)1-319-1301
f: +43 (0)1-319-1300
anfrage@phenomenex.com

Belgium
t: +32 (0)2 503 4015 (French)
t: +32 (0)2 511 8666 (Dutch)
f: +31 (0)30-2383749
beinfo@phenomenex.com

Canada
t: +1 (800) 543-3681
f: +1 (310) 328-7768
info@phenomenex.com

China
t: +86 400-606-8099
f: +86 (0)22 2532-1033
phen@agela.com

Denmark
t: +45 4824 8048
f: +45 4810 6265
nordicinfo@phenomenex.com

Finland
t: +358 (0)9 4789 0063
f: +45 4810 6265
nordicinfo@phenomenex.com

France
t: +33 (0)1 30 09 21 10
f: +33 (0)1 30 09 21 11
franceinfo@phenomenex.com

Germany
t: +49 (0)6021-58830-0
f: +49 (0)6021-58830-11
anfrage@phenomenex.com

India
t: +91 (0)40-3012 2400
f: +91 (0)40-3012 2411
indiainfo@phenomenex.com

Ireland
t: +353 (0)1 247 5405
f: +44 1625-501796
eirinfo@phenomenex.com

Italy
t: +39 051 6327511
f: +39 051 6327555
italiainfo@phenomenex.com

Luxembourg
t: +31 (0)30-2418700
f: +31 (0)30-2383749
nlinfo@phenomenex.com

Mexico
t: 01-800-844-5226
f: 001-310-328-7768
tecnicomx@phenomenex.com

The Netherlands
t: +31 (0)30-2418700
f: +31 (0)30-2383749
nlinfo@phenomenex.com

New Zealand
t: +64 (0)9-4780951
f: +64 (0)9-4780952
nzinfo@phenomenex.com

Norway
t: +47 810 02 005
f: +45 4810 6265
nordicinfo@phenomenex.com

Puerto Rico
t: +1 (800) 541-HPLC
f: +1 (310) 328-7768
info@phenomenex.com

Spain
t: +34 91-413-8613
f: +34 91-413-2290
espinfo@phenomenex.com

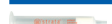
Sweden
t: +46 (0)8 611 6950
f: +45 4810 6265
nordicinfo@phenomenex.com


United Kingdom
t: +44 (0)1625-501367
f: +44 (0)1625-501796
ukinfo@phenomenex.com


USA
t: +1 (310) 212-0555
f: +1 (310) 328-7768
info@phenomenex.com


**All other countries
Corporate Office USA** 
t: +1 (310) 212-0555
f: +1 (310) 328-7768
info@phenomenex.com


Strata®-X SPE Ordering Information

Format	Sorbent Mass	Part Number	Unit
Tube			
	30 mg	8B-S100-TAK**	1 mL (100/box)
	30 mg	8B-S100-TBJ	3 mL (50/box)
	60 mg	8B-S100-UBJ**	3 mL (50/box)
	100 mg	8B-S100-EBJ	3 mL (50/box)
	100 mg	8B-S100-ECH	6 mL (30/box)
	200 mg	8B-S100-FBJ	3 mL (50/box)
	200 mg	8B-S100-FCH	6 mL (30/box)
	500 mg	8B-S100-HBJ	3 mL (50/box)
	500 mg	8B-S100-HCH	6 mL (30/box)

Giga™ Tube	Sorbent Mass	Part Number	Unit
	500 mg	8B-S100-HDG	12 mL (20/box)
	1 g	8B-S100-JDG	12 mL (20/box)
	1 g	8B-S100-JEG	20 mL (20/box)
	2 g	8B-S100-KEG	20 mL (20/box)
	5 g	8B-S100-LFF	60 mL (16/box)

Teflon® Tube	Sorbent Mass	Part Number	Unit
	200 mg	8B-S100-FBJ-T	3 mL (50/box)
	200 mg	8B-S100-FDG-T	12 mL (20/box)

96-Well Plate	Sorbent Mass	Part Number	Unit
	10 mg	8E-S100-AGB	2 Plates/Box
	30 mg	8E-S100-TGB	2 Plates/Box
	60 mg	8E-S100-UGB	2 Plates/Box

96-Well Microelution Plate	Sorbent Mass	Part Number	Unit
	2 mg	8M-S100-4GA	ea

** Tab-less tubes available. Contact Phenomenex for details.



If Phenomenex products in this technical note do not provide at least an equivalent separation as compared to other products of the same phase and dimensions, return the product with comparative data within 45 days for a FULL REFUND.

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Strata-X is patented by Phenomenex. U.S. Patent No. 7,119,145.

SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362

CAUTION: this patent only applies to the analytical-sized guard cartridge holder, and does not apply to SemiPrep, PREP or ULTRA holders, or to any cartridges.

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