LC-MS/MS

ENVIRONMENTAL APPLICATIONS

phenomenex®
...breaking with tradition™

Access info and savings on featured environmental products at:

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Widen Your Environmental SCOPE

The world is changing and we need to widen our Environmental Scope. Although analytical techniques and established regulated methods are not easily changed; more complex targets, larger lists, and a variety of sample matrices create a daily challenge for environmental chemists. By using the latest technologies and techniques in HPLC/UHPLC and Sample Preparation, laboratories and chemists are able to develop better approaches to make their work **Faster, Cheaper and Easier**.

Phenomenex is committed to supporting the industry through a comprehensive product portfolio of Sample Preparation, HPLC/UHPLC, and LC-MS, columns and accessories, along with application and method development services to meet industry needs.

guarantee

If Phenomenex products in this brochure 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.

Table of Contents

For more Environmental Resources visit:
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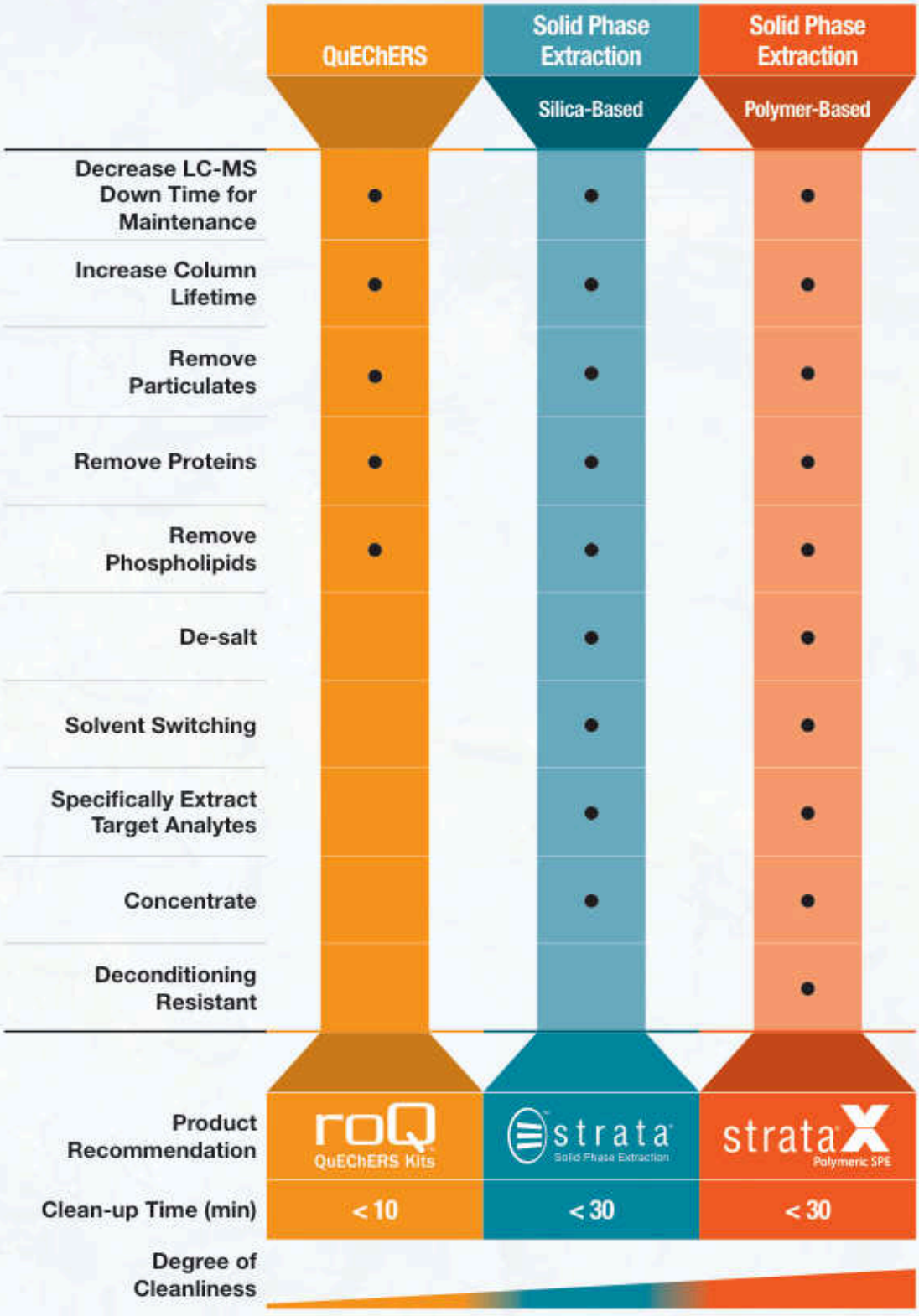
Select the Appropriate Sample Prep Technique for Your Key Environmental Requirements



Learn more about Phenomenex Sample Preparation Solutions
www.phenomenex.com/SamplePrep

QuEChERS

Quick-Easy-Cheap-Effective-Rugged-Safe

roQ™ QuEChERS Kits

Radically simplify your sample preparation of complex matrices with QuEChERS. roQ QuECHERS shortens complicated extraction procedures, reduces the use of hazardous solvents, and is easy to use.

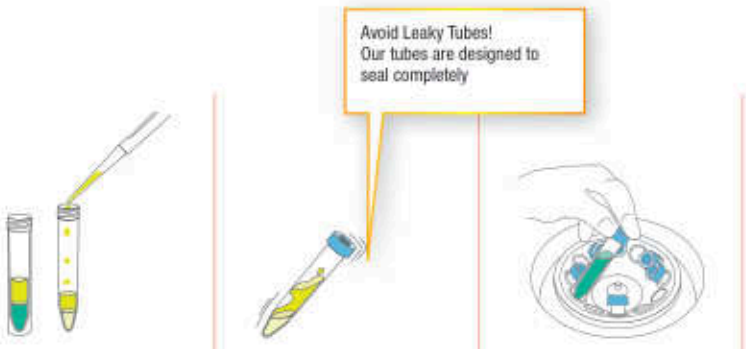
STEP 01 Extraction

Pesticides and analytes of interest are extracted. This process relies on the combination of organic solvent and various salts to partition the analytes from the sample into an organic layer (typically acetonitrile).

Blend samples to be analyzed.	Weigh blended sample.	Add salts and acetonitrile.	Shake tube for 1 minute.	Centrifuge tube for 5 minutes.

STEP 02 Clean-Up/Dispersive SPE (dSPE)

An aliquot of the organic layer from the extraction step is subjected to further clean up by dispersive SPE. This step selectively removes unwanted interferences.



Add supernatant from extraction procedure into a roQ dSPE tube.	Shake dSPE tube for 30 seconds.	Centrifuge dSPE tube for 5 minutes.

See how QuEChERS works, visit:
www.phenomenex.com/roQ

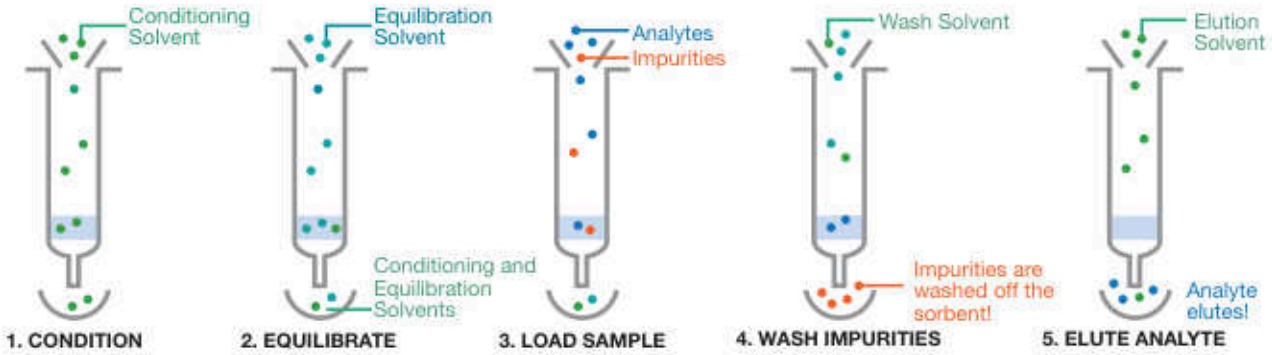
Solid Phase Extraction (SPE)

strata Solid Phase Extraction

SPE is a very targeted form of sample preparation that allows you to isolate your analyte of interest while removing any interfering compounds that may be in your sample.

- Targeted analyte extraction for cleaner analysis
- Concentration of samples for better chromatographic results
- Solvent switching for GC or LC compatibility

SPE General Protocol



A Choice for Every Analyte

OPTION 01

Acidic Compounds

Strong Acids (pK_a < 2)	Weak Acids (pK_a 2-4)
Strata-X-AW	Strata-X-A

OPTION 02

Neutral Compounds

Neutral Compounds
Strata-X

OPTION 03

Basic Compounds

Weak Bases (pK_a 8-10)	Strong Bases (pK_a > 10)
Strata-X-C	Strata-X-CW

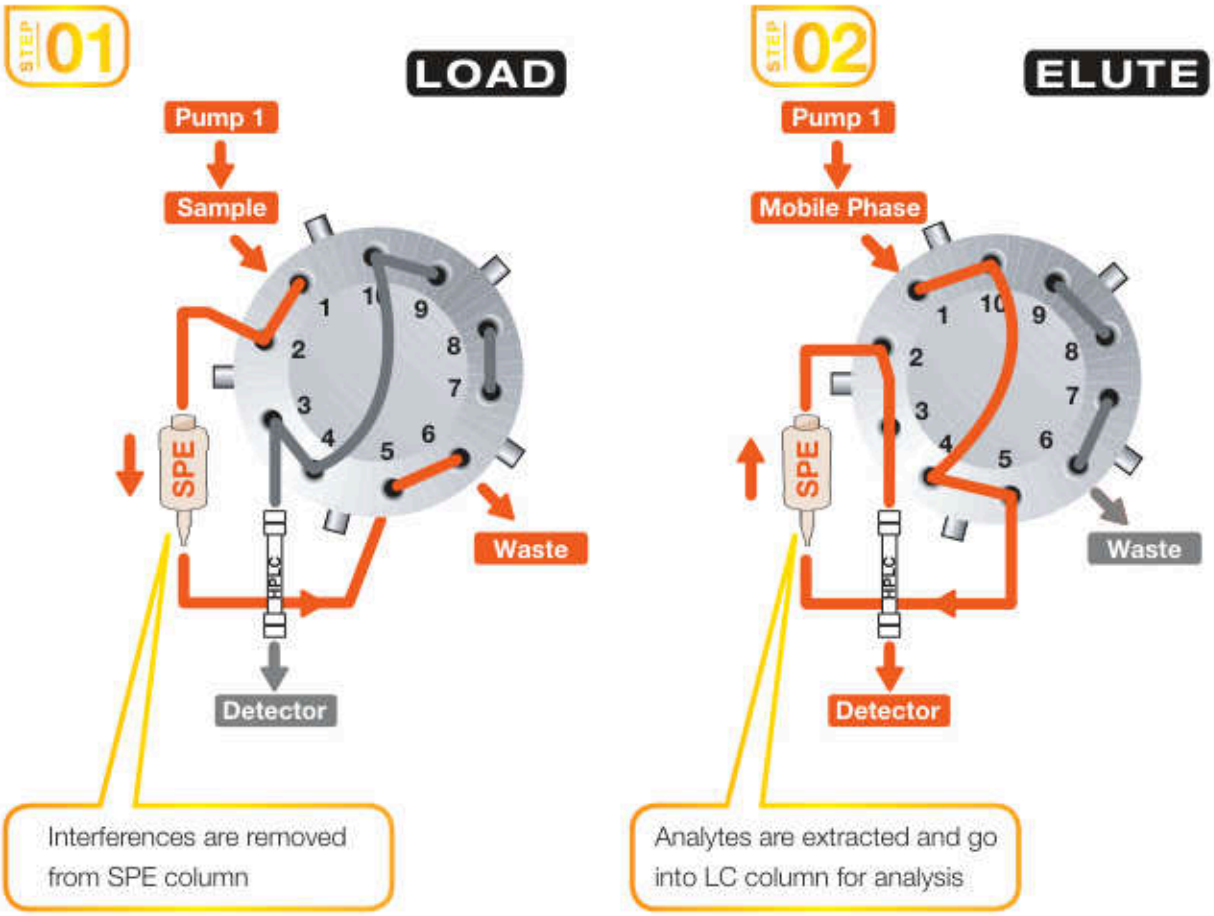
Develop a method in under 1 minute and request a free Strata-X sample
www.phenomenex.com/mdtool

On-line SPE

strata X Polymeric SPE

On-line SPE is an alternative to other traditional SPE formats, but offers a less labor intensive and time consuming extraction method which allows samples to be cleaned up in parallel with the LC analysis. This approach allows for improved sample throughput without compromising sensitivity.

Standard 10 Port-2 Position On-line SPE Set-up



On-line SPE is available in the following chemistries

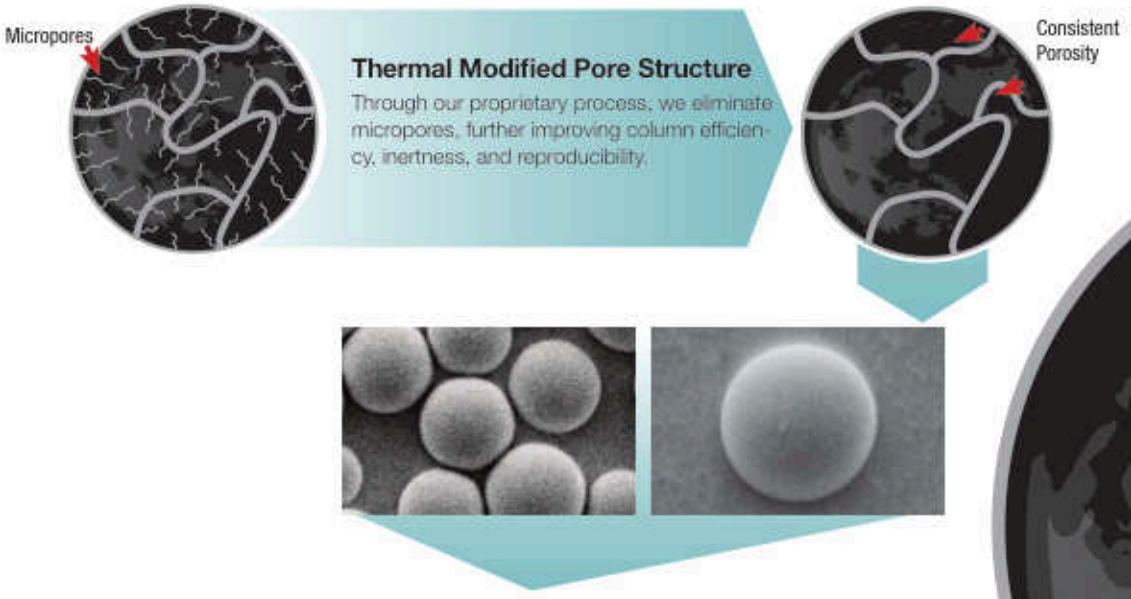
- Strata C18, C8
- Strata-X, X-C, X-CW, X-A, X-AW

Learn more about Strata and Strata-X at:
www.phenomenex.com/SPE

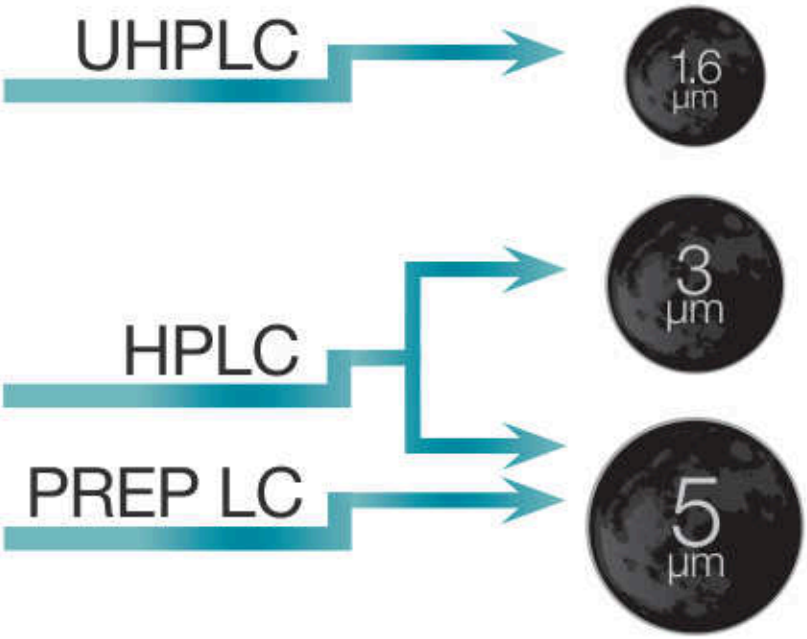
Cutting Edge Fully Porous Silica Particle

explore LUNA OMEGA

Luna is one of the most recognized HPLC/UHPLC brands on the market, delivering high efficiency, ruggedness, reproducibility, and dependability for a wide range of analyses.



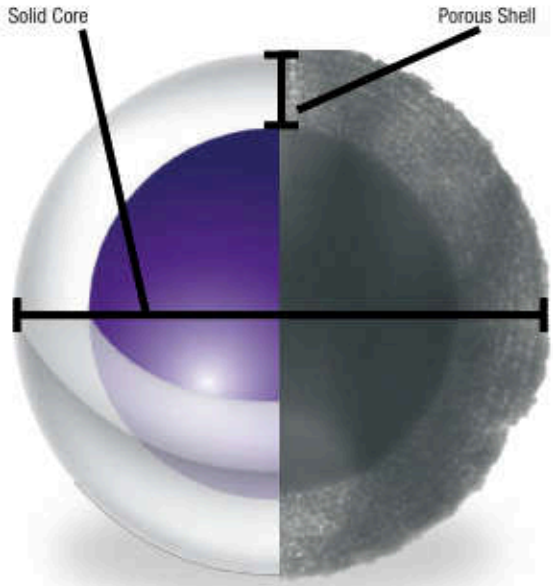
Luna Omega Particle Selection



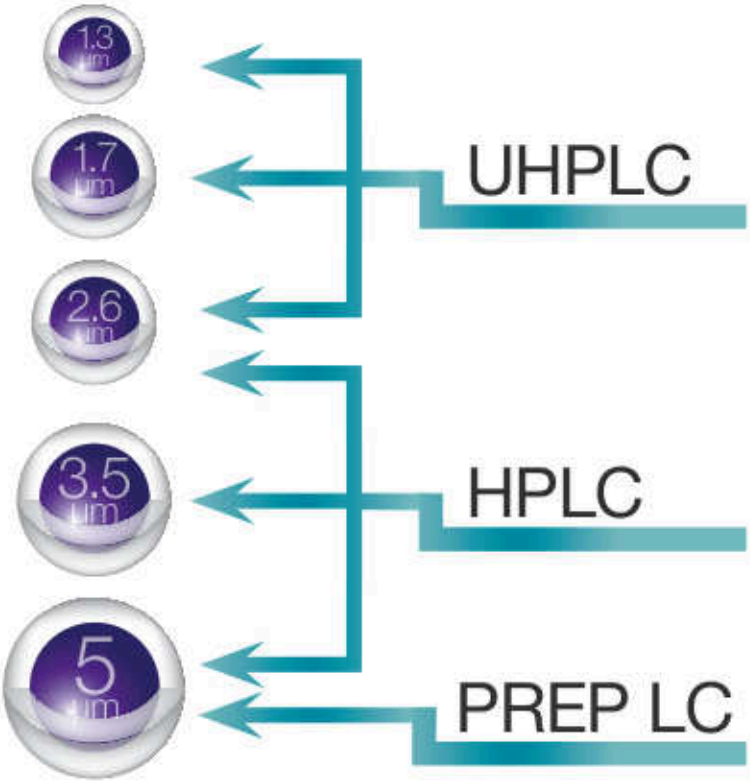
The Chosen Core-Shell Brand

KINETEX Core-Shell Technology

Kinetex Core-Shell technology delivers dramatic improvements in efficiency over conventional fully porous media which can be leveraged to increase resolution, greatly improve productivity, reduce solvent consumption, and decrease costs.



Kinetex Core-Shell Particle Selection



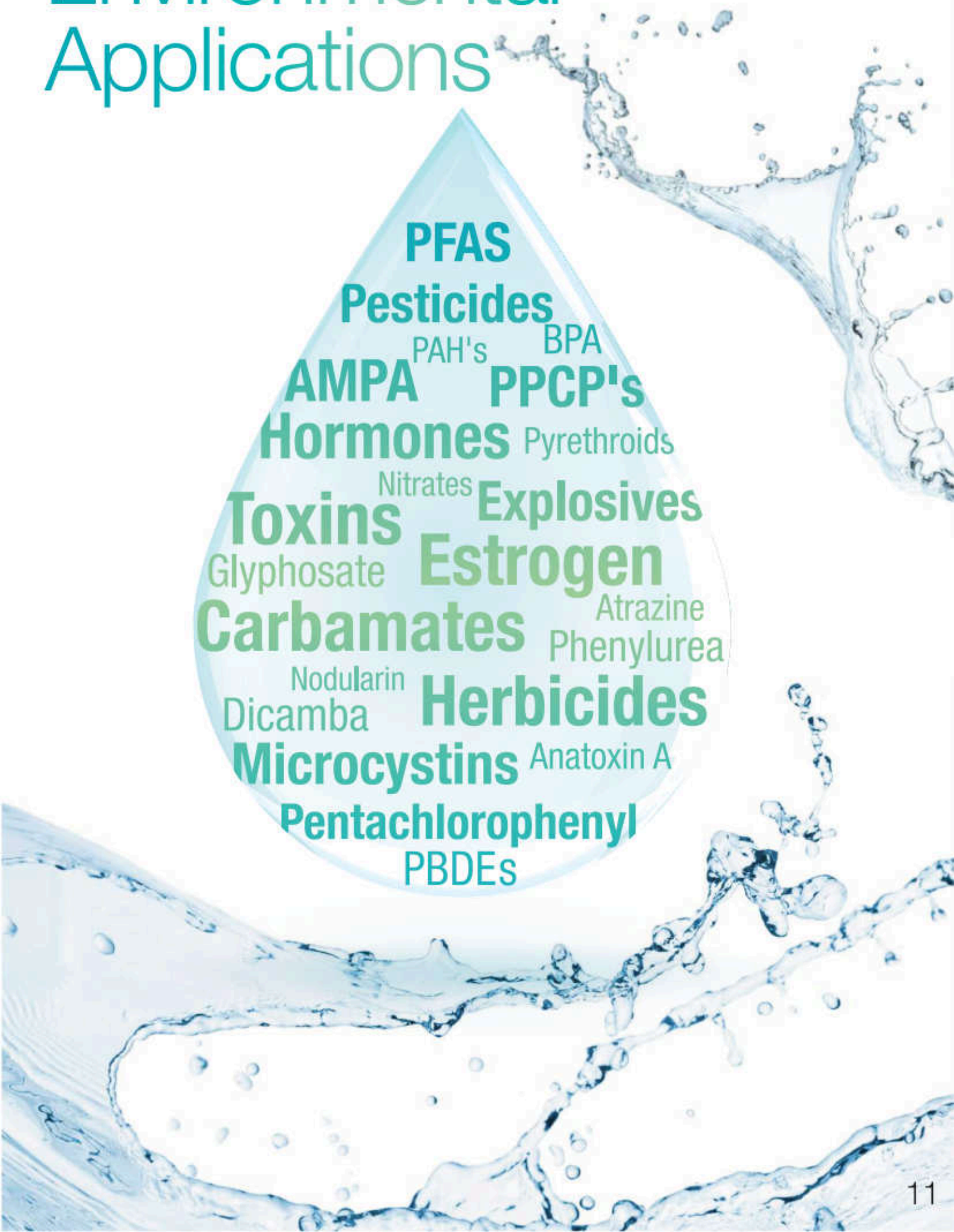
Free Method Development Support and Guidance

Did you know?

You have a Phenomenex technical support team dedicated to supporting your lab's needs! We collaborate with chemists every day to improve productivity and results while working within the bounds of your established methods.

Email:
info@phenomenex.com

Environmental Applications



Multi-Residue Pesticides

Using Core-Shell Technology LC Columns

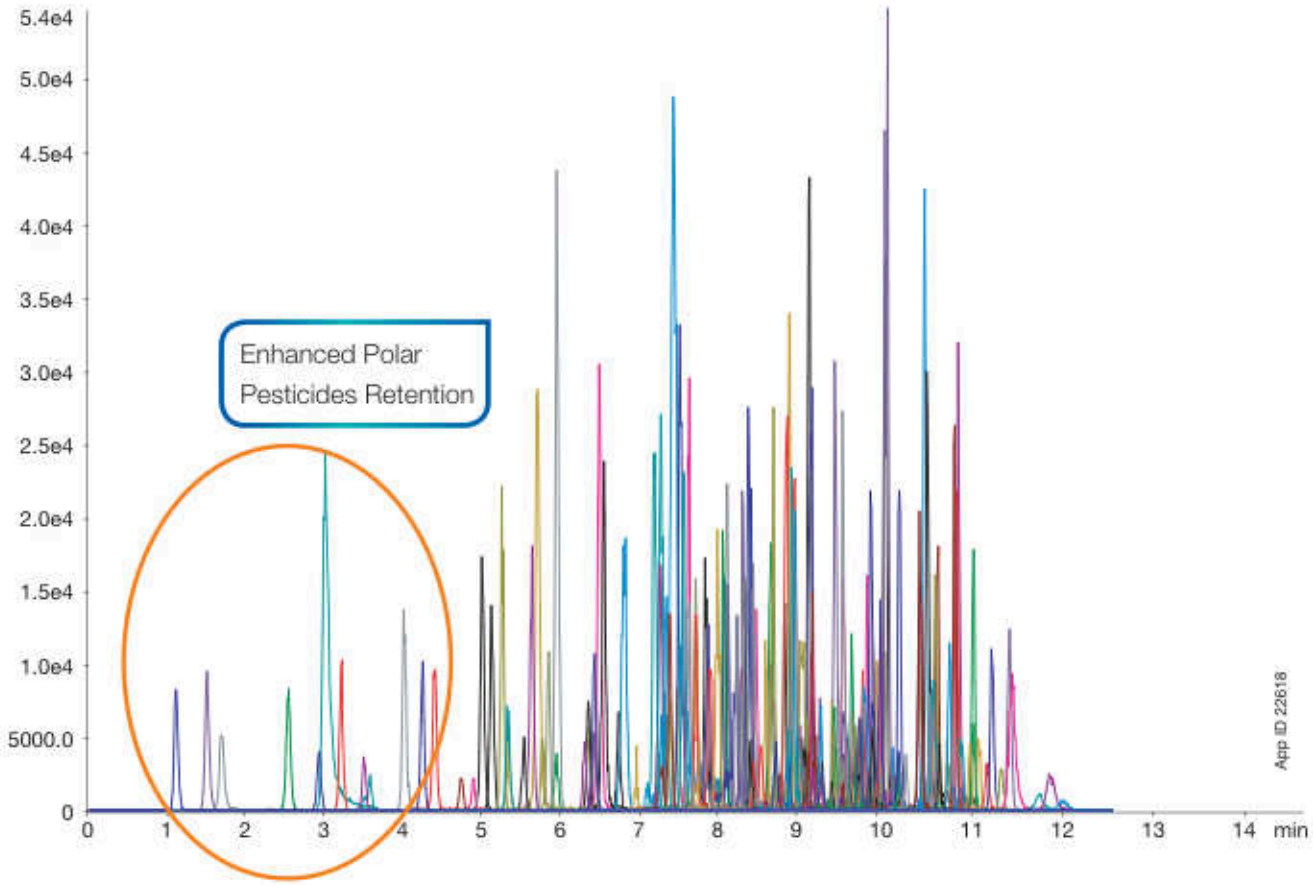
LC-MS/MS Conditions

Column: Kinetex® 5 µm Biphenyl
Dimensions: 100 x 2.1 mm
Part No.: 00D-4627-AN
SecurityGuard™: AJ0-9209
Mobile Phase: A: 5 mM Ammonium formate in Water
B: 5 mM Ammonium formate in Methanol

Gradient:

Time (min)	% B
0.01	10
1	10
10	90
15	90
15.1	10
20	10

Flow Rate: 0.5 mL/min
Temperature: 35 °C
Detection: Tandem Mass Spectrometer (MS/MS) (0 °C)
Instrument: SCIEX 4500 QTRAP®
Sample: 175 Pesticide mix



For complete pesticides list visit:
www.phenomenex.com/Searchapps

Search: 22618

Multi-Residue Pesticides

Using Traditional Fully Porous LC Columns

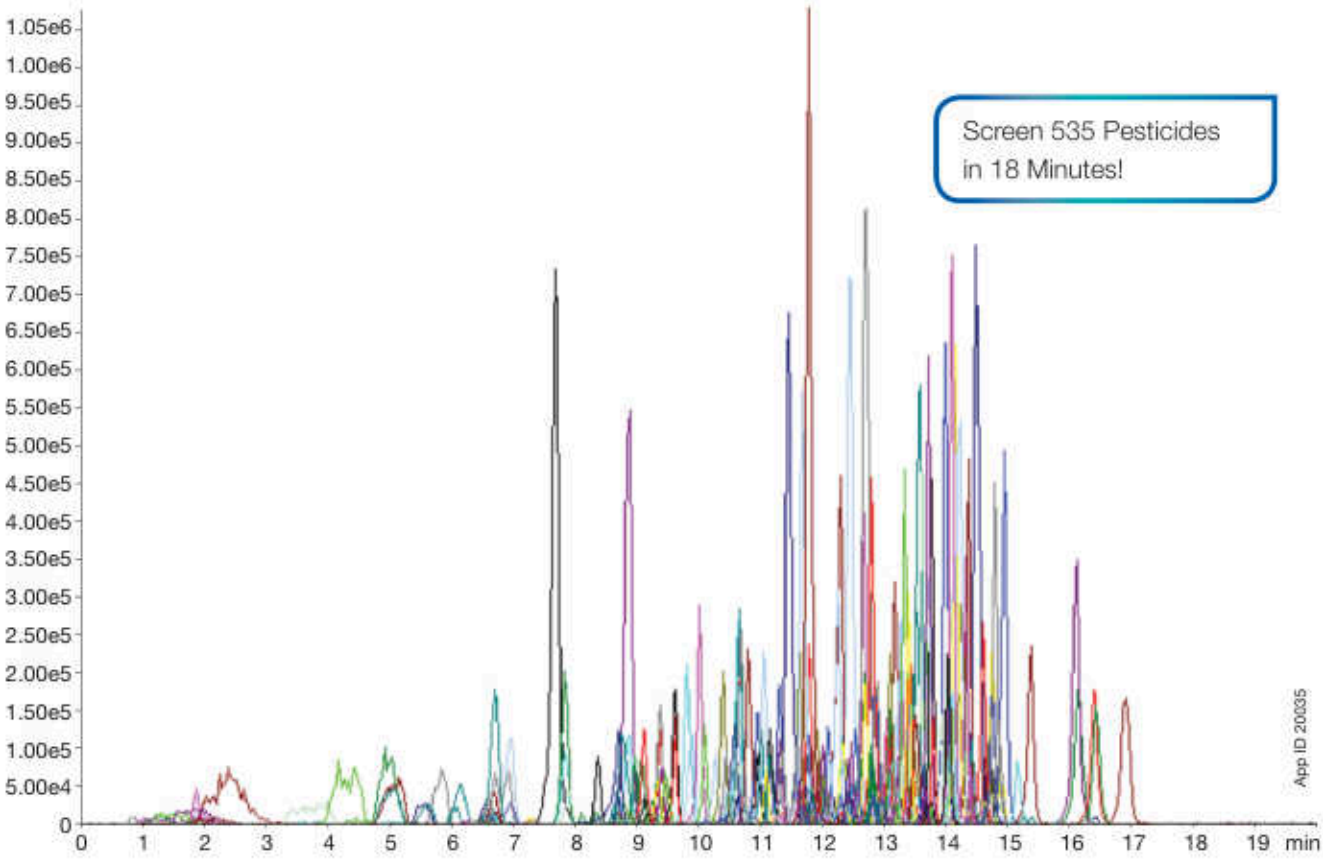
LC-MS/MS Conditions

Column: Synergi™ 2.5 µm Fusion-RP
Dimensions: 50 x 2.0 mm
Part No.: 008-4423-B0
SecurityGuard™: AJ0-4286
Mobile Phase: A: Water/Methanol (90:10) + 5 mM Ammonium formate
B: Methanol/Water (90:10) + 5 mM Ammonium formate

Gradient:

Time (min)	% B
0	0
1	0
15	100
18	100
18.05	0
20	0

Flow Rate: 0.4 mL/min
Temperature: 40 °C
Detection: Tandem Mass Spectrometer (MS/MS) (400 °C)
Instrument: SCIEX API 3200™
Sample: 535 Pesticide mix



For entire pesticides list please visit:
www.phenomenex.com/Searchapps
Search: 20035

125 Pesticides

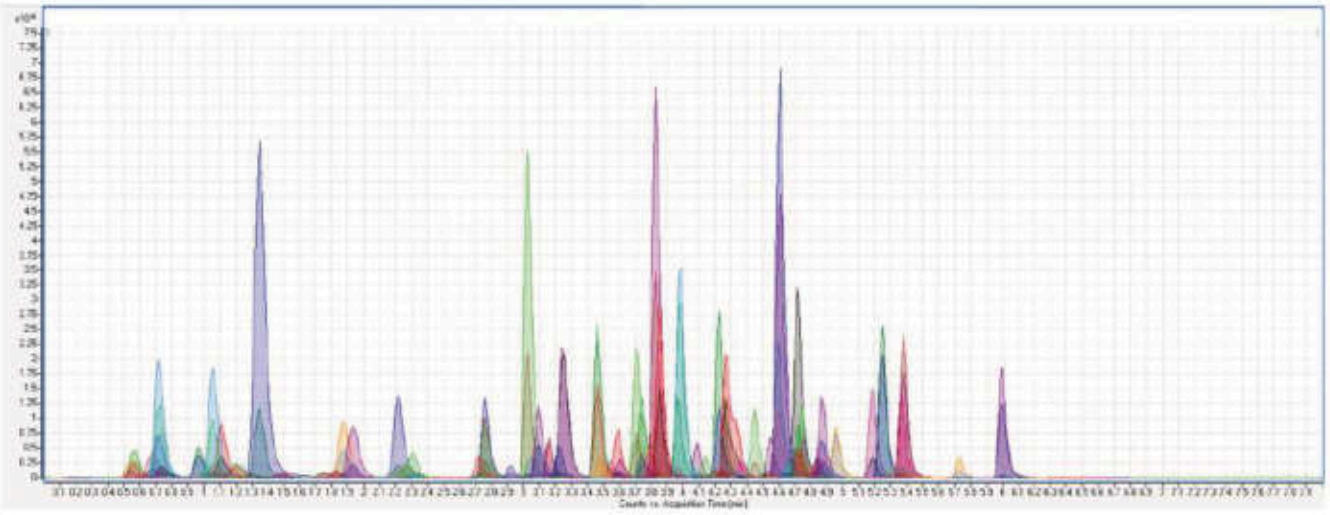
In Groundwater

UHPLC-MS/MS Conditions

Column: Luna® Omega 1.6 µm C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4742-AN
SecurityGuard™: AJ0-9502
Mobile Phase: A: 2.5 mM Ammonium acetate + 0.05% Acetic acid in Water
B: 0.05% Acetic acid in Acetonitrile
Gradient:

Time (min)	% B
0	15
0.5	15
2.5	40
5.75	75
6.25	100
7	100
7.1	15
8	15

Flow Rate: 0.55 mL/min
Injection: 75 µL- Direct Inject
Temperature: 45 °C
Detection: Tandem Mass Spectrometer (MS/MS) (22")
Instrument: Agilent 6495 Triple Quadrupole
Sample: 125 Pesticides and Degradants



App ID 23803

WECK LABORATORIES, INC.

We would like to provide special thanks to
Weck Laboratories for contributing this application.

For entire pesticides list please visit:
www.phenomenex.com/Searchapps

Search: 23803

Triazine Pesticides

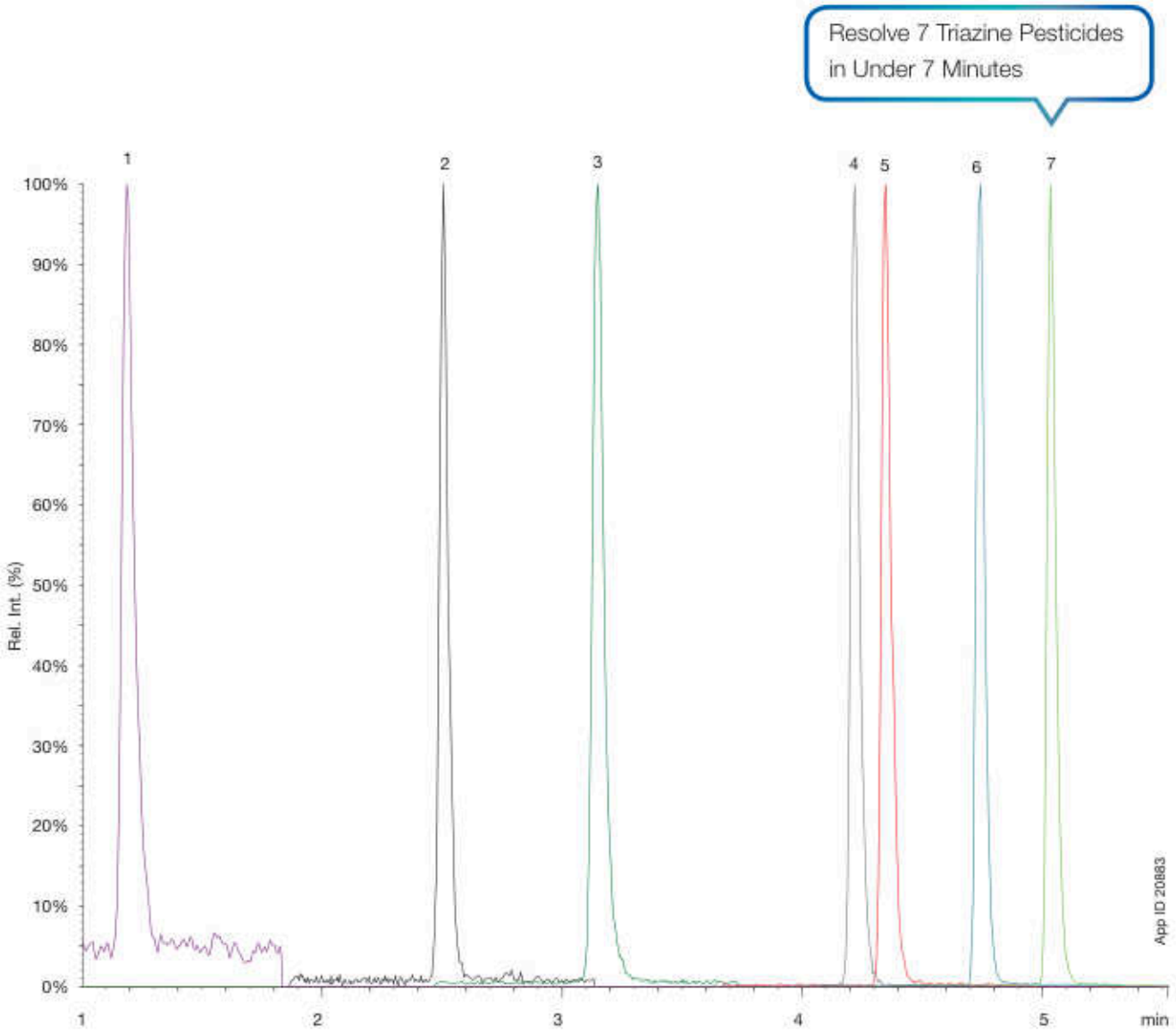
In Water

LC-MS/MS Conditions

Column: Kinetex® 2.6µm C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4462-AN
SecurityGuard™: AJ0-8784
Mobile Phase: A: Water with 0.1 % Formic acid
B: 100 % Methanol
Gradient:

Time (min)	% B
0	5
0.25	40
2	40
3	75
4	75
4.1	5

Flow Rate: 0.3 mL/min
Temperature: 35 °C
Detection:: Mass Spectrometer (MS) 600 °C
Instrument: SCIEX API 4000™
Sample: 1. Atrazine-desethyl-desisopropyl (DACT)
2. Atrazine-desisopropyl (DIA)
3. Atrazine-desethyl (DEA)
4. Cyanazine
5. Simazine
6. Atrazine
7. Propazine



Phenylurea Pesticides

In Water

LC-MS/MS Conditions

Column: Synergi™ 2.5 µm Fusion-RP
Dimensions: 50 x 2.0 mm
Part No.: 008-4423-B0
Mobile Phase: A: Water with 5 mM Ammonium formate
B: Methanol with 5 mM Ammonium formate

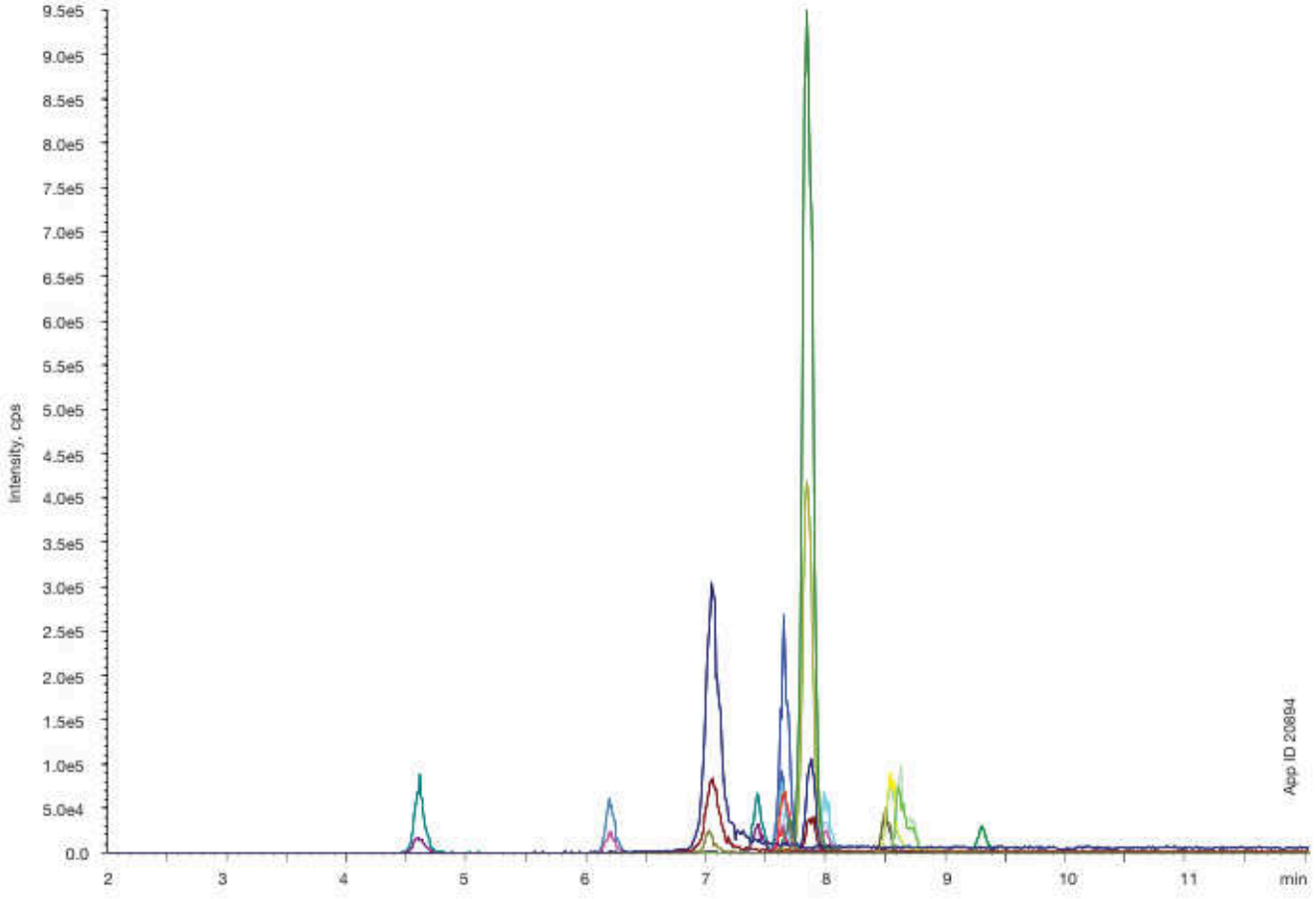
Gradient:

Time (min)	% B
0	20
8	90
14	90
15	20
20	20

Flow Rate: 0.25 mL/min
Temperature: 25 °C
Detection: Tandem Mass Spectrometer (MS/MS) (500 °C)
Instrument: SCIEX 3200 QTRAP®

Sample:

Analyte Name	RT (min)
1. Fenuron	4.6
2. Metoxuron	6.2
3. Thidiazuron	7.0
4. Tebuthiuron	7.1
5. Monolinuron	7.4
6. Chlortoluron	7.6
7. Fluomethuron	7.6
8. Metabenzthiazuron	7.6
9. D6-Isoproturon (internal standard)	7.6
10. Metobromuron	7.7
11. Isoproturon	7.9
12. Diuron	8.0
13. Linuron	8.5
14. Propanil	8.5
15. Siduron	8.6
16. Diflubenzuron	9.3



Carbamate Pesticides

In Water

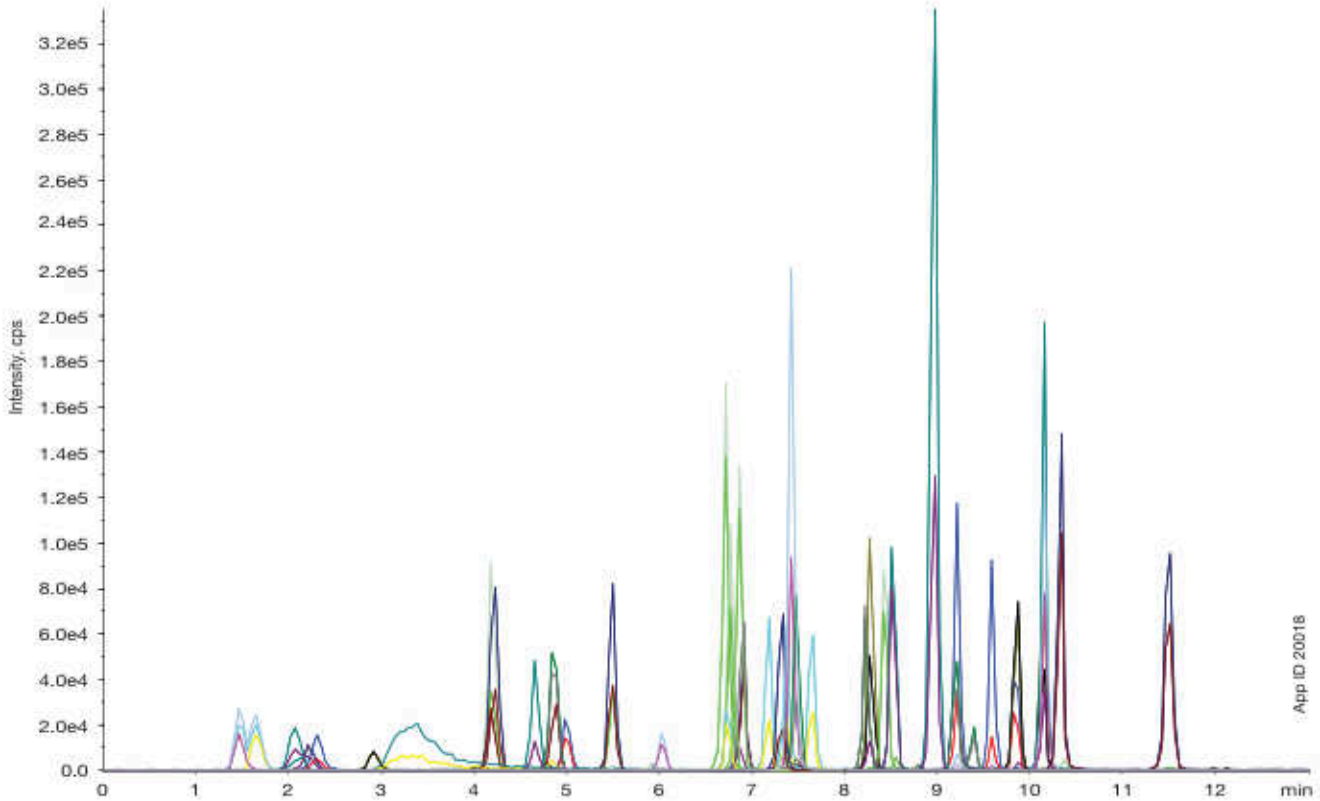
LC-MS/MS Conditions

Column: Synergi™ 4 µm Fusion-RP
Dimensions: 50 x 2.0 mm
Part No.: 00B-4424-B0
SecurityGuard™: AJ0-7556
Mobile Phase: A: Water with 5 mM Ammonium formate
B: Methanol with 5 mM Ammonium formate

Gradient:

Time (min)	% B
-5	20
0	20
8	90
14	90
15	20

Flow Rate: 0.25 mL/min
Temperature: 25 °C
Detection: Tandem Mass Spectrometer (MS/MS) (25 °C)
Instrument: SCIEX 3200 QTRAP®



For entire pesticides list please visit:
www.phenomenex.com/Searchapps

Search: 20018

Organophosphorus Pesticides

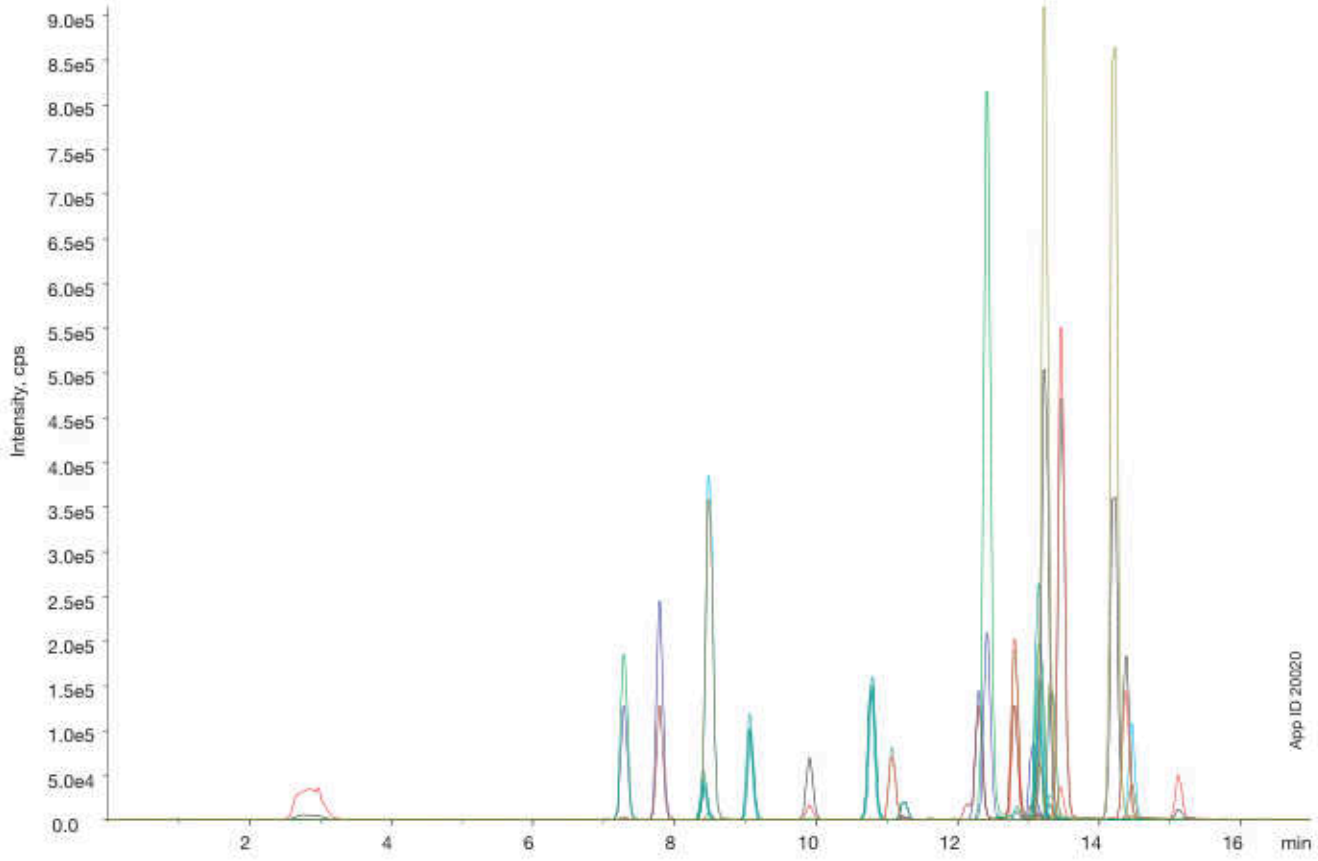
LC-MS/MS Conditions

Column: Synergi™ 4 µm Fusion-RP
Dimensions: 50 x 2.0 mm
Part No.: 00B-4424-B0
SecurityGuard™: AJ0-7556
Mobile Phase: A: Add 5 mL of 1 M Ammonium formate to 1 L Water
B: Add 5 mL of 1 M Ammonium formate to 1 L Methanol

Gradient:

Time (min)	% B
-5	5
0	5
2	5
6	50
12	90
14	90
16	5
17	5

Flow Rate: 0.25 mL/min
Temperature: 25 °C
Detection: Tandem Mass Spectrometer (MS/MS) (ambient)
Instrument: SCIEX 3200 QTRAP®



For entire pesticides list please visit:
www.phenomenex.com/Searchapps

Search: 20020

Glyphosate Analysis

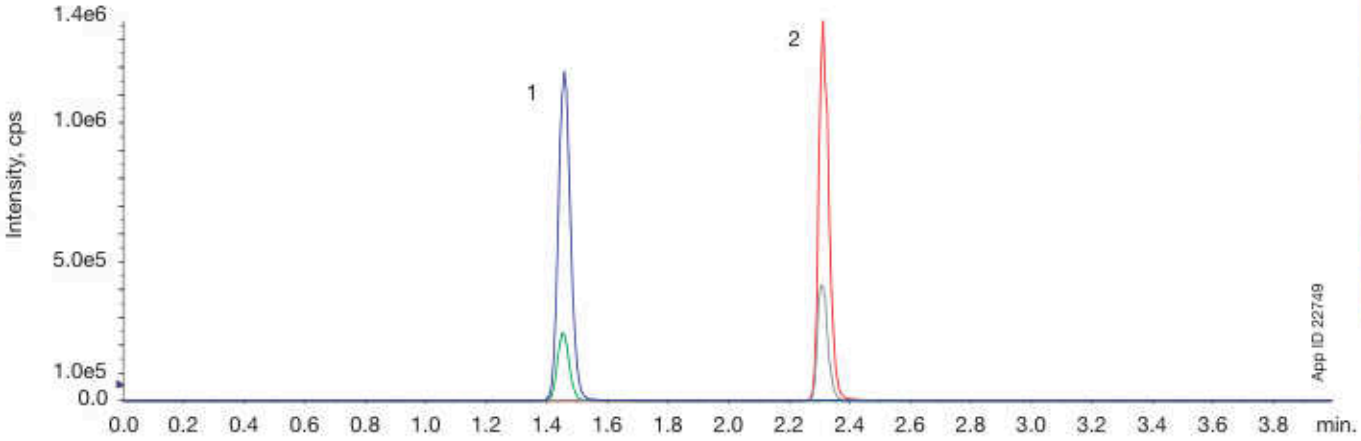
Derivatized LC-MS/MS Conditions

Column: Gemini® 3 µm NX-C18
Dimensions: 50 x 2.0 mm
Part No.: 00B-4453-B0
SecurityGuard™: AJ0-8367
Mobile Phase: A: 5 mM Ammonium Bicarbonate, pH 9
B: Acetonitrile/Methanol (50:50)

Gradient:

Time (min)	% B
0	20
4	90
4.1	20
7	20

Flow Rate: 0.4 mL/min
Inj. Volume: 20 µL
Temperature: Ambient
Detection: Tandem Mass Spectrometer (MS/MS) Electrospray ionization (ESI-) in negative mode
Instrument: SCIEX API 5000™
Sample: 1. Glyphosate
2. AMPA



Note: FMOC Derivatization

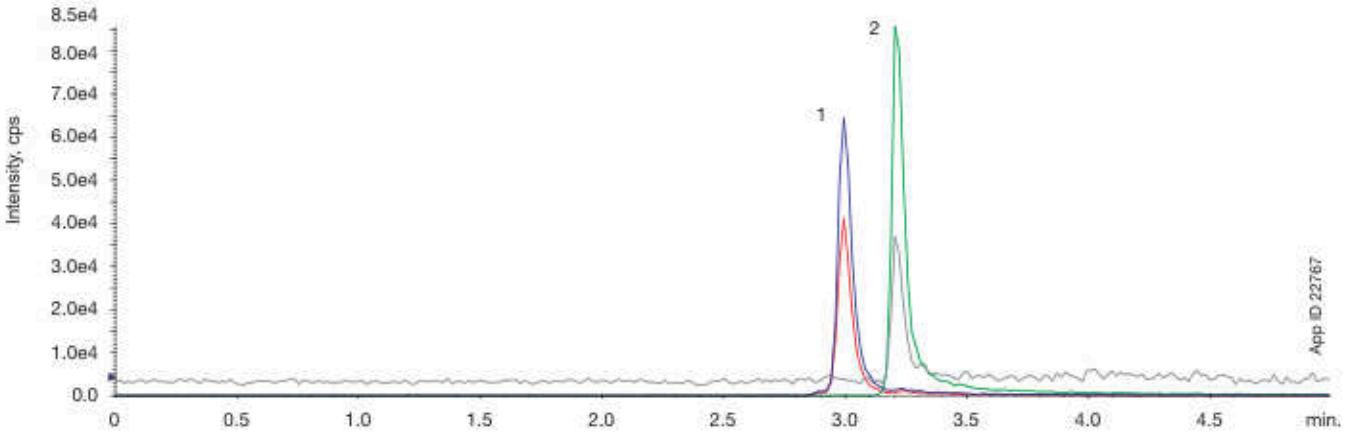
Underivatized LC-MS/MS Conditions

Column: Luna® 3 µm NH_2
Dimensions: 50 x 2.0 mm
Part No.: 00B-4377-B0
SecurityGuard™: AJ0-4301
Mobile Phase: A: 10 mM Ammonium Bicarbonate, pH 10
B: Acetonitrile

Gradient:

Time (min)	% B
0	80
5	10
5.1	80
8	80

Flow Rate: 0.4 mL/min
Inj. Volume: 5 µL
Temperature: Ambient
Detection: Tandem Mass Spectrometer (MS/MS) Electrospray ionization (ESI-) in negative mode
Instrument: SCIEX API 5000
Sample: 1. Glyphosate
2. AMPA



Pyrethroids

In Marine and Fresh Water Sediment

Modified roQ™ QuEChERS Protocol

Step 1

Extraction

1. Weigh 2g of dry sediment into a 50mL centrifuge tube
2. Spike sample with internal standards
3. Add 10mL of reagent water and mix
4. Add 10mL of acidified Acetonitrile (0.1% acetic acid) and shake for 10 seconds
5. Add Sodium acetate (1.5 g) and $MgSO_4$ (2.0 g), or weigh out (~) 3.5g of AOAC 2007.01 roQ extraction packet (AH0-9043)
6. Shake for 10 seconds and vortex for 1 minute
7. Centrifuge at 4000 rpm for 5 minutes
8. Cool sample at – 20 °C for 1.5 hours or until frozen

Step 2

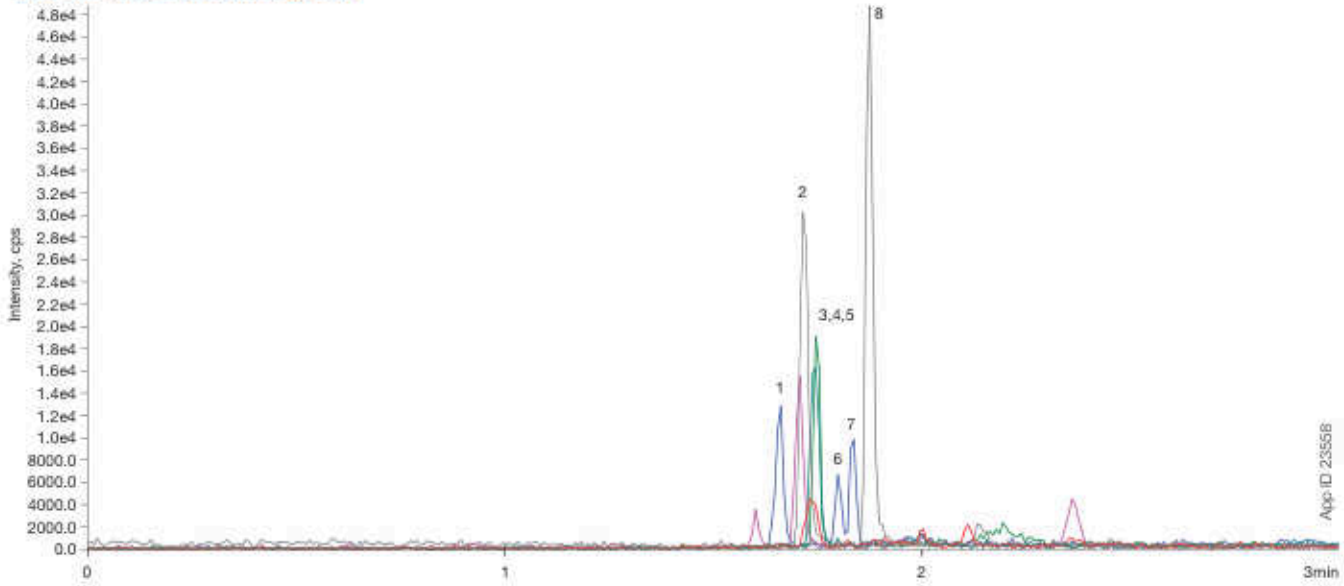
Clean-up

1. Transfer 8-9mL of the supernatant from the previous step and transfer to a 15mL PSA/C18 roQ dSPE tube (KS0-8926)
2. Shake for 10 seconds and vortex for 1 minute
3. Centrifuge for 10 minutes at 3000 rpm
4. Aspirate 5mL of supernatant and filter using a Phenex™ 0.2µm PTFE filter (AF0-2202-12) into a test tube suitable for a dry-down station
5. Evaporate sample using a dry-down station at ≤35 °C to near dryness
6. Reconstitute by first adding 50µL of Acetone, vortexing, and then adding 950µL of Methanol/Water (1:1)
7. Transfer the reconstituted sample to an autosampler vial for analysis

LC-MS/MS Conditions

Column:	Kinetex® 2.6µm EVO C18
Dimensions:	50 x 2.1mm
Part No.:	00B-4725-AN
SecurityGuard™:	AJ0-9298
Mobile Phase:	A: 5mM Ammonium acetate B: Methanol
Gradient:	Time (min) / % B 0 / 50 1 / 95 3 / 95 3.01 / 50 6 / 50
Flow Rate:	0.7mL/min
Injection:	5µL
Temperature:	22 °C
Detection:	Tandem Mass Spectrometer (MS/MS)
Instrument:	SCIEX Triple Quad™ 4500
Sample:	1. Cyfluthrin 2. Cyhalothrin 3. Cypermethrin 4. Deltamethrin 5. Esfenvalerate 6. cis-Permethrin 7. trans-Permethrin 8. Bifenthrin

LC-MS/MS Chromatogram



Learn more about roQ applications visit: ***www.phenomenex.com/roQ***

Acknowledgements

Special thanks to the Sanitation Districts of Los Angeles County – San Jose Creek Water Quality Laboratory for contributing this method.

SANITATION DISTRICTS OF LOS ANGELES COUNTY

Converting Waste Into Resources

Enhance your

Environmental Analysis with LC-MS/MS

A comprehensive compendium of application notes across all facets of environmental testing

Whether you test for environmental contaminants, drinking water quality, soil and biota analysis, crop safety or other applications, the accuracy of your results can mean the health and safety of people, livestock and farmland.

Assisting you in the development of new methods to improve your workflows, we have developed a compendium of application notes created by our scientists, partners and customers for environmental sample testing.

- Analysis of pesticides and acid herbicides in water and in soil
- A variety of PPCPs and illicit drugs detection screening applications
- Hormone detection in water samples
- PFAs, explosives and flame retardants detection and others

At SCIEX, we recognize that method development can be highly laborious and time consuming, with multiple inefficiencies which can delay your tests getting to validation.

Download Here:
www.sciex.com/environ-compendium

SCIEX
Answers for Science. Knowledge for Life.™

Perfluoroalkyl Substances (PFAS)

In Sediments

Sample Preparation

QuEChERS Extraction Protocol

Step 1

Extraction

1. Weigh 2.0 g of dried sediment into a polypropylene container and spike with isotopically-labeled internal standards
2. Add 10 mL deionized water and vortex. Add 10 mL acidified acetonitrile (1 % acetic acid) to the slurry and vortex
3. Add the extraction salts (1.5 g Sodium Acetate and 2 g $MgSO_4$) to the sample and vortex for 1 minute
4. Centrifuge the samples for 5 minutes at 4000 rpm
5. Place the samples in a rack and freeze at -20° for 30-60 minutes. This freezing step allows for easier extraction of the supernatant

Step 2

Clean-up

1. Transfer 8-9 mL of the acetonitrile supernatant into a roQ QuEChERS PSA/C18 dSPE clean-up tube (Part no. KS0-8926) and vortex for one minute
2. Centrifuge the dSPE tubes for 10 minutes at 3000 rpm
3. Place an aliquot of the extract in a HPLC vial and dilute 1:1 with deionized water. The sample is now ready for analysis

LC-MS/MS Conditions

Column: Gemini® 3 µm C18
Dimensions: 100 x 3 mm
Part No.: 00D-4439-Y0
Inline Filter: Krudkatcher™ Ultra
Part No.: AF0-8497
Delay Column: Luna® 5 µm C18 (2)
Dimensions: 30 x 2.0 mm
Part No.: 00A-4252-B0
Mobile Phase: A: 20 mM Ammonium acetate in water
B: Methanol

Gradient:

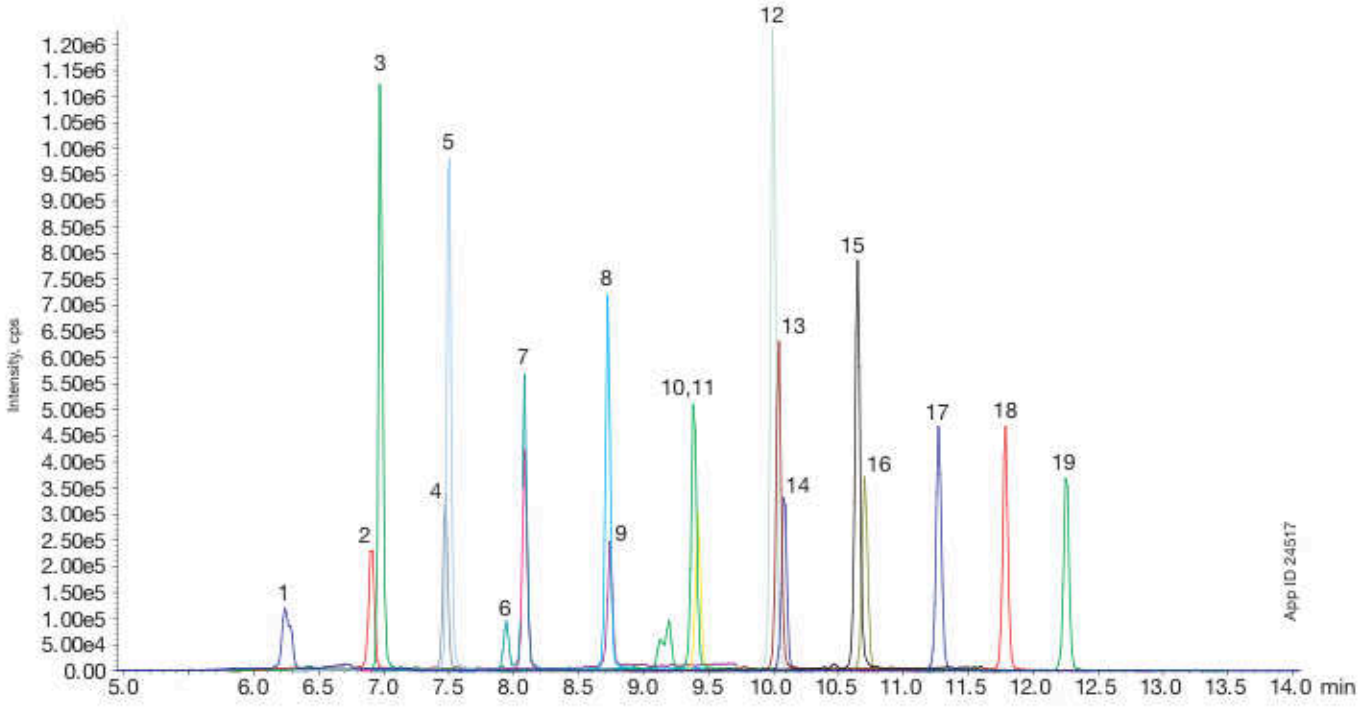
Time (min)	% B
0	10
1.5	65
8	95
8.1	99
12	99
12.5	10

Flow Rate: 0.6 mL/min
Injection: 90 µL
Temperature: 40 °C
Detection: Tandem Mass Spectrometer (MS/MS) ESI Negative (sMRM)
Instrument: SCIEX 5500 QTRAP®

Sample:

1. PFBA
2. PFPeA
3. PFBS
4. PFHxA
5. PFPS
6. PFHxS
7. PFHpA
8. PFHpS
9. PFOA
10. PFOS
11. PFNA
12. PFOSA
13. PFNS
14. PFDA
15. PFDS
16. PFUdA
17. PFDoA
18. PFTrDA
19. PFTeDA

Extracted ion chromatogram of sediments spiked with 1.0 ng/g of the target analytes



PFAS Large-Volume Direct Injection

In Water Samples

LC-MS/MS Conditions

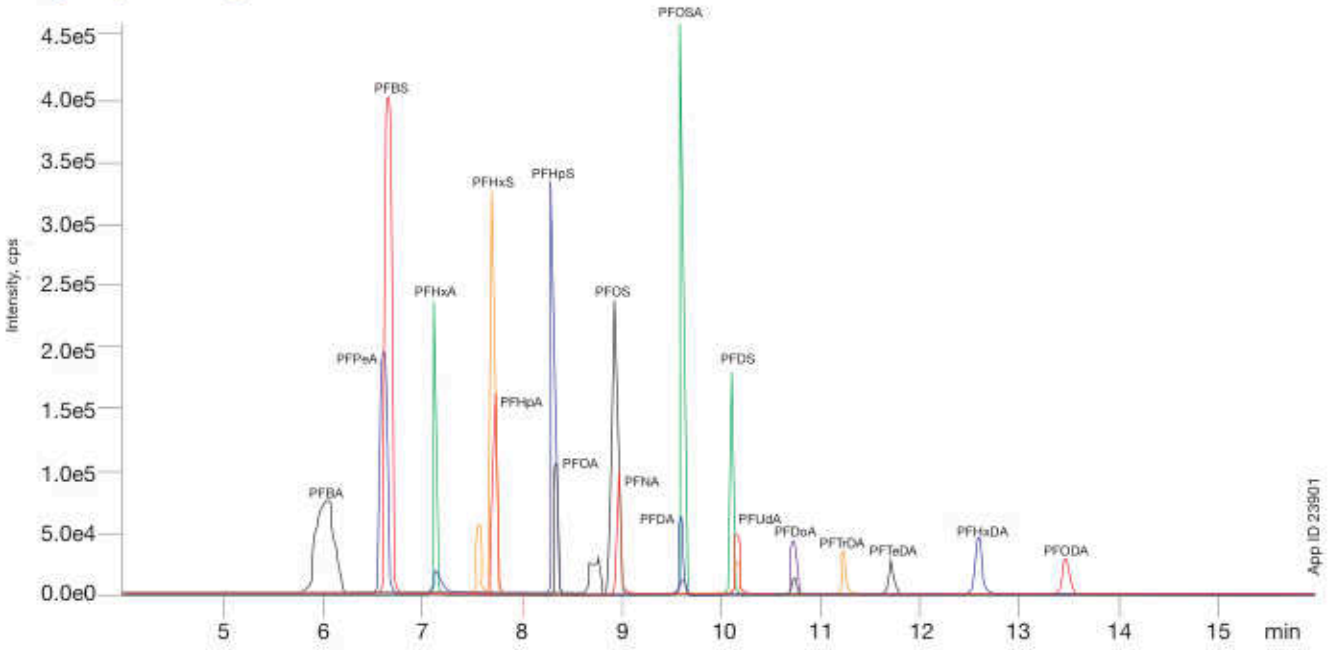
Column: Gemini® 3 µm C18
Dimensions: 100 x 3.0 mm
Part No.: 00D-4439-Y0
SecurityGuard™: AJ0-7596
Mobile Phase: A: 20 mM Ammonium Acetate in Water
B: Methanol

Gradient:

Time (min)	% B
0	10
1.5	65
8	95
8.1	99
12	99
12.5	10

Flow Rate: 0.6 mL/min
Injection: 0.950 µL
Temperature: 40 °C
Detection: Tandem Mass Spectrometer (MS/MS)
Instrument: SCIEX Triple Quad™ 5500 with a Turbo V™ source

10 ng/L spike into groundwater matrix diluted with methanol



Acknowledgement

Phenomenex acknowledges Test America (Sacramento, CA) for collaborating with SCIEX and Phenomenex to contribute this application.

Reference

1. For complete application including Mass Spec parameters and sample prep steps, please refer to: "Quantitation of PFASs in Water Samples using LC/MS/MS: Large-Volume Direct Injection and Solid Phase Extraction" at www.SCIEX.com

Perfluorinated Compounds

In Aqueous Matrices Using On-line SPE

Sample Preparation Procedure

1. Samples are collected in polypropylene bottles and preserved with 0.5 g/L Trizma®
2. A 10 mL aliquot is spiked with surrogates at a concentration of 50 ng/L
3. If necessary, filter using a 10 mL syringe fitted to a 1.2 µm glass fiber syringe filter
4. The filtered sample is spiked with internal standard at 50 ng/L
5. The filtered sample is loaded and analyzed using a 5.0 mL injection volume
6. The on-line SPE is completely automated; it includes a sample wash step (2.1 to 4.1 min) to wash Trizma preservative from the media

On-line SPE Program

Time (min)	Water %	MeOH %	ACN %	Flow (mL/min)	Comments
0.00	100	0	0	2.5	Sample Loading
2.00	100	0	0	2.5	Sample Loading
2.10	100	0	0	2.5	SPE Wash
4.10	100	0	0	2.5	SPE Wash
4.11	30	70	0	0	Idle (Elution into LC)
9.00	30	70	0	0	Idle (Elution into LC)
9.01	0	0	100	2.0	ACN Wash
9.49	0	0	100	2.0	ACN Wash
9.50	2.0	98	0	3.0	MeOH Wash
11.50	2.0	98	0	3.0	MeOH Wash
11.51	100	0	0	3.0	Cond: Water
14.00	100	0	0	3.0	Cond: Water

Chemical Abbreviations: Methanol (MeOH); Acetonitrile (ACN)

On-line SPE

On-line SPE: Strata®-X-AW 33 µm Polymeric Weak Anion-Exchange
Dimensions: 20 x 2.0 mm
Part No.: 00M-S038-B0-CB
On-line SPE Cartridge Holder: 20 mm Cartridge Holder
Part No.: CH0-5845
Sample Filters: Phenex™ Glass Fiber 1.2 µm 28 mm

LC-MS/MS Conditions

Column: Kinetex® 5 µm EVO C18 100Å
Dimensions: 100 x 2.1 mm
Part No.: 00D-4633-AN
SecurityGuard™: AJ0-9298
Mobile Phase: A: 0.4 % v/v Ammonium hydroxide in Water
B: Methanol

Gradient:

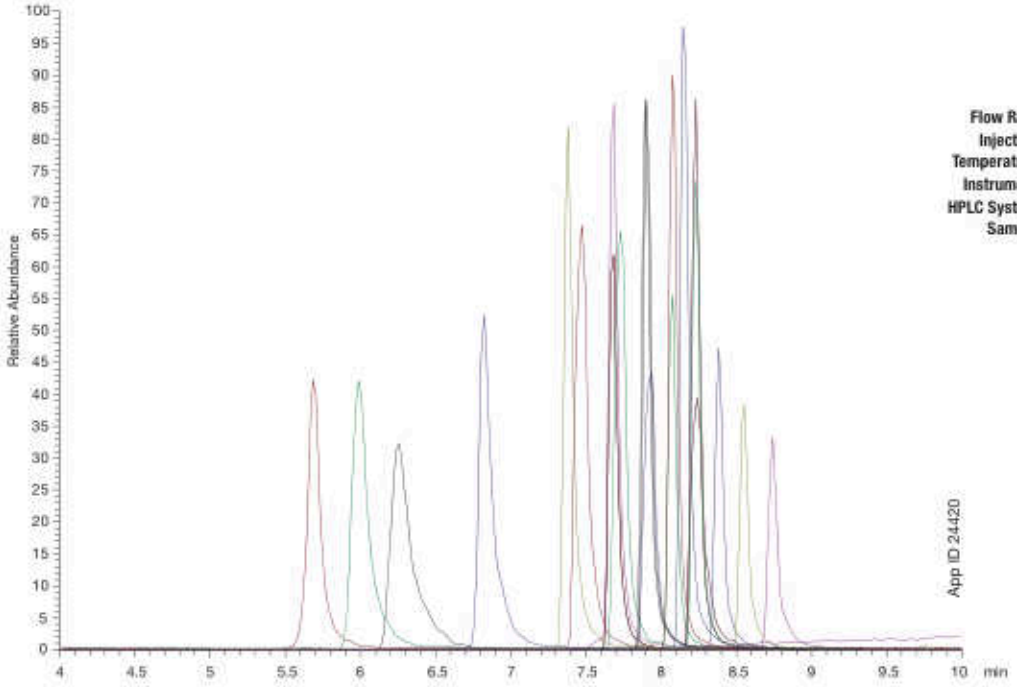
Time (min)	% B
0	90
3.1	20
4.5	20
6.1	90
11	90
14	90

Flow Rate: 0.3 mL/min
Injection: 5 mL
Temperature: Ambient
Instrument: Thermo TSQ Quantum® Ultra QQQ
HPLC System: Thermo Accela™ 1250

Sample:

Analyte	Retention Time (Min)
1. PFBA	5.69
2. PFPeA	6
3. PFBS	6.3
4. PFHxA	6.83
5. PFHpA	7.39
6. PFHxS	7.5
7. 6:2 FTS	7.68
8. PFOA	7.7
9. PFOS	7.7
10. PFNA	7.92
11. PFDS	7.9
12. 8:2 FTS	8.08
13. PFDA	8.09
14. N-MeFOSAA	8.15
15. PFDA	8.2
16. N-EtFOSAA	8.23
17. PFUnDA	8.25
18. PFDoA	8.4
19. PFTrDA	8.56
20. PFTeDA	8.74

LC-MS/MS Chromatogram



Acknowledgement

We would especially like to thank Babcock Laboratories for their support and use of their method, system, and standards for this application.

23 Per-Polyfluoronated Alkyl Substances (PFAS)

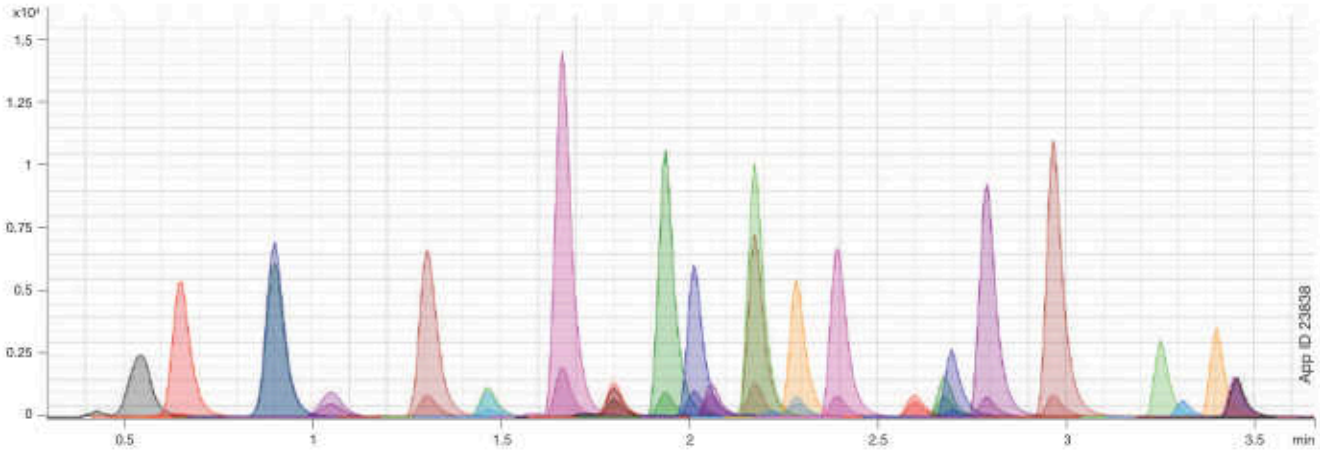
UHPLC-MS/MS

Column: Luna® Omega 1.6 µm PS C18
Dimensions: 50 x 2.1 mm
Part No.: 008-4752-AN
SecurityGuard™: AJ0-9508
Mobile Phase: A: 5 mM Ammonium Acetate in Water
B: Acetonitrile

Gradient:	Time (min)	% B
	0	40
	0.5	40
	3	90
	3.1	100
	4	100

Flow Rate: 0.55 mL/min
Injection: 5 µL
Temperature: 40 °C
Detection: Tandem Mass Spec (MS/MS)
Instrument: Agilent® 6460 QQQ
Sample:

1. 6:2 FTS	13. PFHpA
2. 8:2 FTS	14. PFHpS
3. EtFOSA	15. PFHxA
4. EtFOSE	16. PFHxS
5. FOSA	17. PFNA
6. MeFOSA	18. PFOA
7. MeFOSE	19. PFOS
8. PFBA	20. PFPeA
9. PFBS	21. PFTeDA
10. PFDA	22. PFTrDA
11. PFDoA	23. PFUdA
12. PFDS	



We would like to provide special thanks to
Weck Laboratories for contributing this application.

Hormones

In Marine and Fresh Water Sediment

Modified roQ™ QuEChERS Protocol

Step 1

Extraction

1. Weigh 2g of dry sediment into a 50mL centrifuge tube
2. Spike sample with internal standards
3. Add 10mL of reagent water and mix
4. Add 10mL of acidified Acetonitrile (0.1% Acetic acid) and shake for 10 seconds
5. Add Sodium acetate (1.5 g) and $MgSO_4$ (2.0 g), or weigh out (~) 3.5g of AOAC 2007.01 roQ extraction packet (AH0-9043)
6. Shake for 10 seconds and vortex for 1 minute
7. Centrifuge at 4000 rpm for 5 minutes
8. Cool sample at – 20 °C for 1.5 hours or until frozen

Step 2

Clean-up

1. Transfer 8-9mL of the supernatant from the previous step to a 15mL PSA/C18 roQ dSPE tube (KS0-8926)
2. Shake for 10 seconds and vortex for 1 minute
3. Centrifuge for 10 minutes at 3000 rpm
4. Aspirate 5mL of supernatant and filter using a Phenex™ 0.2µm PTFE filter (AF0-2202-12) into a test tube suitable for a dry-down station
5. Evaporate sample using a dry-down station at ≤35 °C to near dryness
6. Reconstitute by first adding 50µL of Acetone, vortexing, and then adding 950µL of Methanol/Water (1:1)
7. Transfer the reconstituted sample to an autosampler vial for analysis

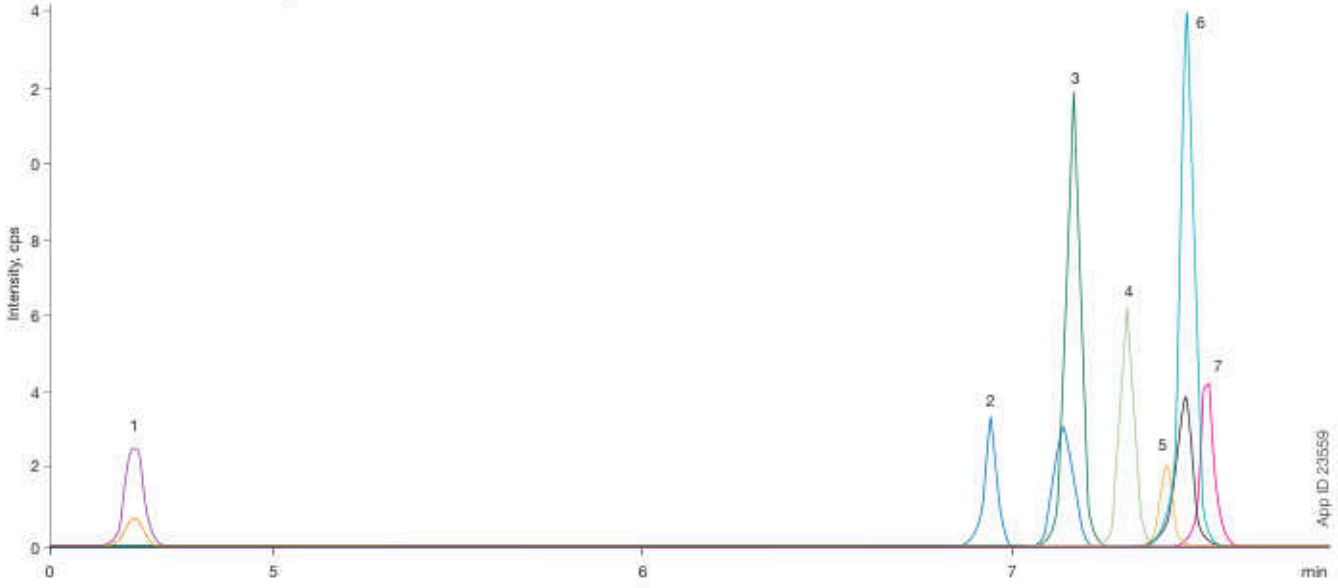
LC-MS/MS Conditions

Column: Kinetex® 2.6µm XB-C18
Dimensions: 50 x 2.1mm
Part No.: 00B-4496-AN
SecurityGuard™: AJ0-8782
Mobile Phase: A: Water
B: Acetonitrile
Gradient:

Time (min)	% B
0	15
1	20
7.25	60
8	80
9.5	80
9.55	15
14	15

Flow Rate: 0.5mL/min
Injection: 12µL
Temperature: 22 °C
Detection: Tandem Mass Spectrometer (MS/MS)
Instrument: SCIEX 5500 QTRAP®, ESI+ and ESI-
Sample:
1. Estriol (E3)
2. 17β-Estradiol (E2)
3. Testosterone (TEST)
4. Equilin (EQ)
5. 17α-Ethinylestradiol (EE2)
6. Estrone (E1)
7. Androstenedione (AND)

LC-MS/MS Chromatogram



Hormones

EPA Method 539

Sample Pre-Treatment

Per the EPA method 539 protocol, 1 L water samples are dechlorinated, preserved, collected, and stored. All standards are freshly prepared in 50% methanol in water containing 20 ng/mL of working internal standards.

SPE Protocol

Cartridge:	Strata® C18-E, 1 g / 20 mL
Part No.:	8B-S001-JEG
Condition:	10 mL Methanol
Equilibrate:	10 mL Water
Load:	Pre-treated samples
Wash:	10 mL Methanol/Water (15:85)
Dry:	5 – 10 minutes under 10" Hg vacuum
Elute:	2x 6 mL Methanol
Dry Down:	Evaporate completely under a stream of N_2 @ 50 °C
Reconstitute:	Add 1 mL of 50 % Methanol in Water containing 20 ng/mL of working internal standards

Extracted Matrix Recoveries

2 ng/L (Tap Water)		
ID (Neg. Ions)	**Recovery %**	**CV %**
17β-Estradiol	88.1	6.53
Estriol	109	1.00
Equilin	72.8	8.46
Estrone	89.6	7.23
17α-Ethynylestradiol	91.6	3.15
2 ng/L (Tap Water)		
ID (Pos. Ions)	**Recovery %**	**CV %**
Testosterone	100	1.24
Androstenedione	108	5.09
Progesterone	113	5.07
Norethisterone	104	2.07

LC-MS/MS Conditions

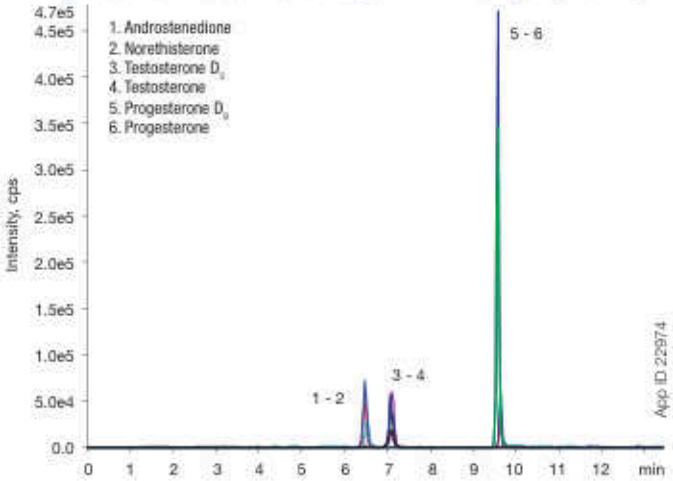
Column: Kinetex® 5 µm EVO C18
Dimensions: 100 x 2.1 mm
Part No.: 00D-4633-AN
SecurityGuard™: AJ0-9298
Mobile Phase: A: 0.2 % Ammonium hydroxide in Water
B: 0.2 % Ammonium hydroxide in Methanol

Gradient:

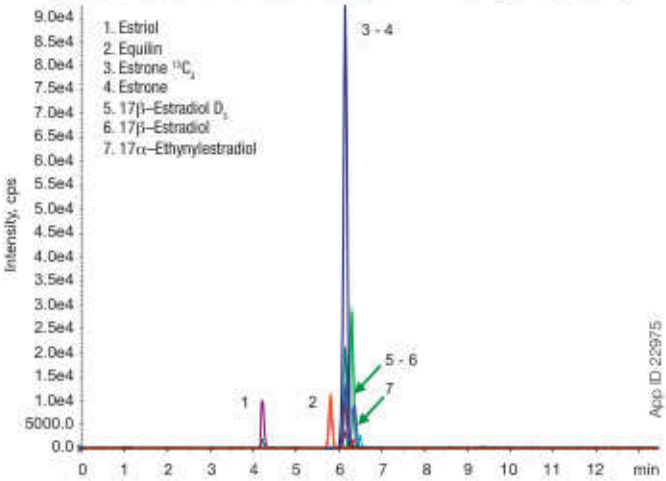
Time (min)	% B
0	30
1	65
6	65
6.5	85
10.5	85
11	30
13.5	30

Flow Rate: 0.2 mL/min
Injection: 30 µL
Detection: Tandem Mass Spectrometer (MS/MS)
Detection: SCIEX Triple Quad™ 4500)

Representative Chromatogram – 2.0 ng/L (ESI +)



Representative Chromatogram – 2.0 ng/L (ESI -)



Pharmaceutical and Personal Care Products (PPCPs)

In Marine and Fresh Water Sediment

Modified roQ™ QuEChERS Protocol

Step 1

Extraction

1. Weigh 2.0 g of dry sediment in a 50mL centrifuge tube
2. Spike sample with internal standards
3. Prepare a second tube (each sample needs two different clean-up steps; one for PPCP+ and PPCP- analysis)
4. To both tubes, add 10mL deionized water and 10mL of acidified Acetonitrile (0.1% Acetic acid) and shake for 10 seconds
5. Add Sodium acetate (1.5 g) and $MgSO_4$ (2.0 g), or weigh out (~)3.5 g of AOAC 2007.01 roQ extraction packet (AH0-9043)
6. Vortex for 1 minute
7. Centrifuge at 4000 rpm for 5 minutes
8. Cool sample at – 20 °C for 1.5 hours or until frozen

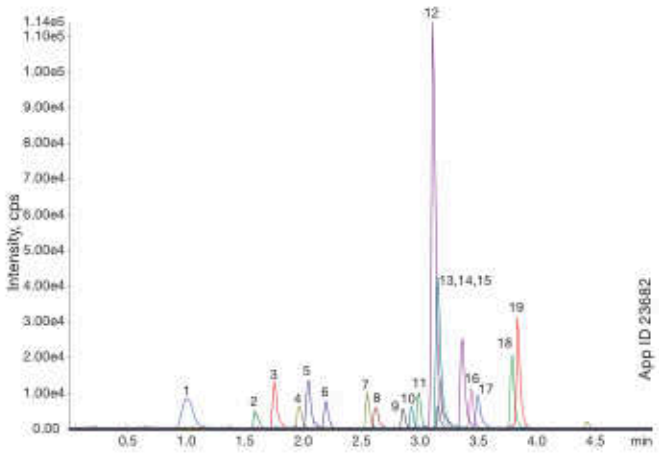
Step 2

Clean-up

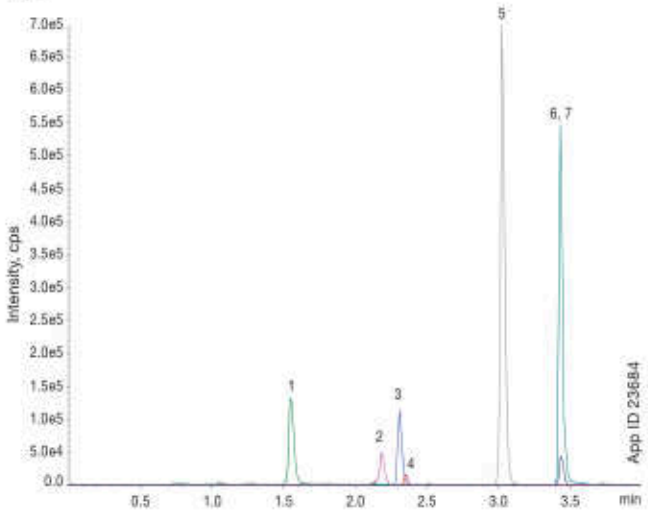
1. Transfer 8-9mL of the supernatant from the previous step into a into a 15mL roQ dSPE tubes. PPCP- supernatant transferred to a PSA/C18 dSPE tube (KS0-8926), PPCP+ goes to PSA only dSPE tube (KS0-8928)
2. Shake for 10 seconds and vortex for 1 minute
3. Centrifuge each tube for 10 minutes at 3000 rpm
4. Aspirate 5mL of the supernatant in each tube and filter through a Phenex™ 0.2µm PTFE filter (AF0-2202-12) into a test tube suitable for a dry-down station
5. Evaporate samples using a dry-down station at ≤35 °C to near dryness
6. Reconstitute each sample by first adding 50µL of Acetone, vortexing, and then adding 950µL of Methanol/Water (1:1)
7. Transfer the reconstituted sample to an autosampler vial for analysis

LC-MS/MS Chromatograms

ESI+



ESI-



ESI+ Conditions

Column: Kinetex® 2.6 µm C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4462-AN
SecurityGuard™: AJ0-8782
Mobile Phase: A: 0.1% Formic acid in Water
B: 0.1% Formic acid in Methanol
Gradient:

Time (min)	% B
0	10
4	100
5	100
5.01	10
8	10

Flow Rate: 0.4 mL/min
Injection: 2 µL
Temperature: Ambient
Detection: Tandem Mass Spectrometer (MS/MS)
Detector: SCIEX Triple Quad™ 4500, ESI+
Sample:
1. Atenolol
2. Trimethoprim
3. Caffeine
4. Sulfamethoxazole
5. Metoprolol
6. Primidone
7. Meprobamate
8. Propranolol
9. TCEP
10. Phenytoin
11. Carbamazepine
12. Erythromycin
13. DEET
14. Fluoxetine
15. Carisoprodol
16. Diazepam
17. TCPP
18. Oxybenzone
19. TDCPP

ESI- Conditions

Column: Kinetex 2.6 µm C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4462-AN
SecurityGuard™: AJ0-8782
Mobile Phase: A: 40 ppm Ammonium acetate
B: Methanol
Gradient:

Time (min)	% B
0	30
4	100
4.01	30
7	30

Flow Rate: 0.6 mL/min
Injection: 10 µL
Temperature: Ambient
Detection: Tandem Mass Spectrometer (MS/MS)
Detector: SCIEX Triple Quad™ 4500, ESI-
Sample:
1. Naproxen
2. Diclofenac
3. Ibuprofen
4. Bisphenol A
5. Gemfibrozil
6. Triclocarban
7. Triclosan

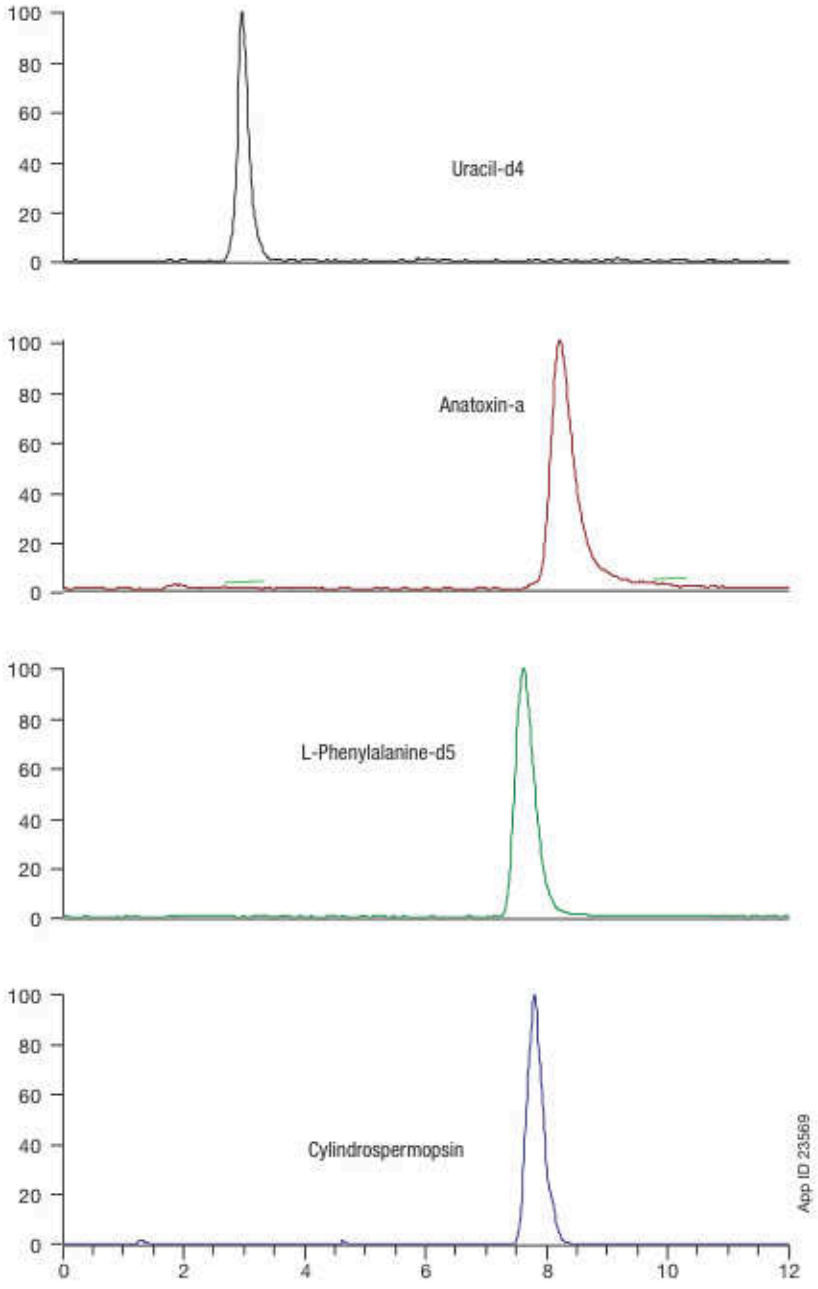
Cylindrospermopsin and Anatoxin-a

In Drinking Water

UHPLC-MS/MS Conditions

Column: Luna® Omega 1.6 µm Polar C18
Dimensions: 100 x 2.1 mm
Part No.: 00D-4748-AN
SecurityGuard™: AJ0-9505
Mobile Phase: 0.2 % Acetic acid in Water
Flow Rate: 0.2 mL/min
Temperature: 40 °C
System: Thermo Scientific® Accela™ UHPLC
Detection: MS/MS (ESI+)
Detector: TSQ Quantum™ Ultra
Sample: 1. Uracil-d4
2. Anatoxin-a
3. L-Phenylalanine-d5
4. Cylindrospermopsin

Name	Q1	Q3	CE
Uracil-d4	114.8	97.8	15
Anatoxin-a	165.8	148.8	15
L-Phenylalanine-d5	170.8	124.8	28
Cylindrospermopsin	416.2	194	35



Acknowledgement

We would especially like to thank Babcock Laboratories for their support and use of their method, system, and standards for this application.

Microcystins and Nodularin

In Drinking Water

UHPLC-MS/MS Conditions

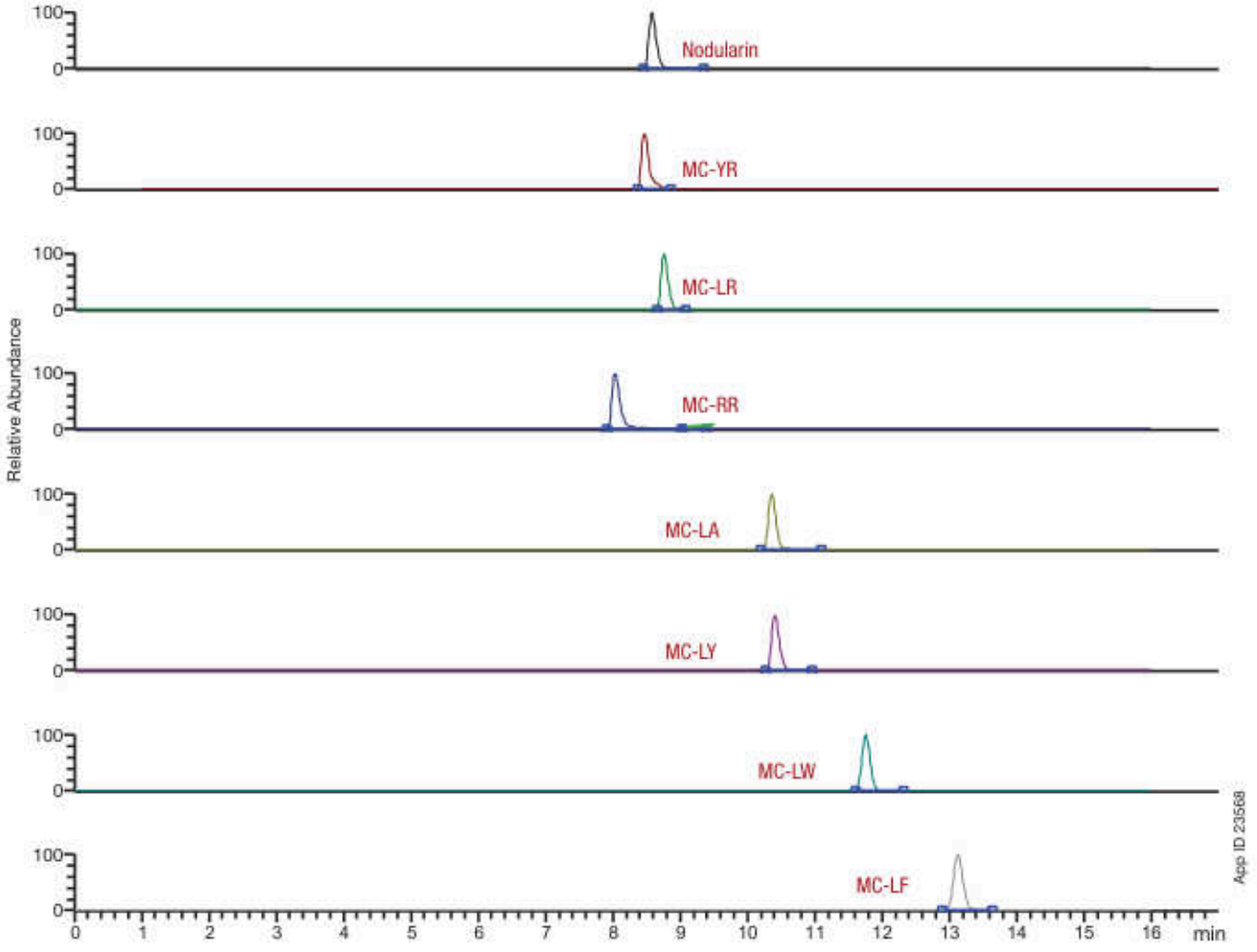
Column: Luna® Omega 1.6 µm Polar C18
Dimensions: 100 x 2.1 mm
Part No.: 00D-4748-AN
SecurityGuard™: AJ0-9505
Mobile Phase: A: Water
B: Methanol
C: 1 mM Ammonium fluoride

Gradient:

Time (min)	% A	% B	% C
0	80	10	10
5	20	70	10
13	20	70	10
13.01	80	10	10
18	80	10	10

Flow Rate: 0.2 mL/min
Temperature: 40 °C
System: Thermo Scientific™ Accela™ UHPLC
Detection: MS/MS (ESI+)
Detector: TSQ Quantum™ Ultra
Sample: 1. Nodularin
2. MC-YR
3. MC-LR
4. MC-RR
5. MC-LA
6. MC-LY
7. MC-LW
8. MC-LF

Name	Q1	Q3	CE
Nodularin	825.4	135.0	54
MC-YR	523.3	135.0	15
MC-LR	995.5	135.0	60
MC-RR	519.9	135.0	30
MC-LA	910.5	135.0	48
MC-LY	1002.5	135.0	50
MC-LW	1025.5	135.0	50
MC-LF	986.5	135.0	45



* All precursors are the [M+H]+ ion EXCEPT for MC-YR and MC-RR which were detected as [M+2H]2+
** MC-LW is not listed as a target analyte in EPA Method 544

Acknowledgement

We would especially like to thank Babcock Laboratories for their support and use of their method, system, and standards for this application.

Microsystins and Nodularins

In Water

LC-MS/MS Conditions

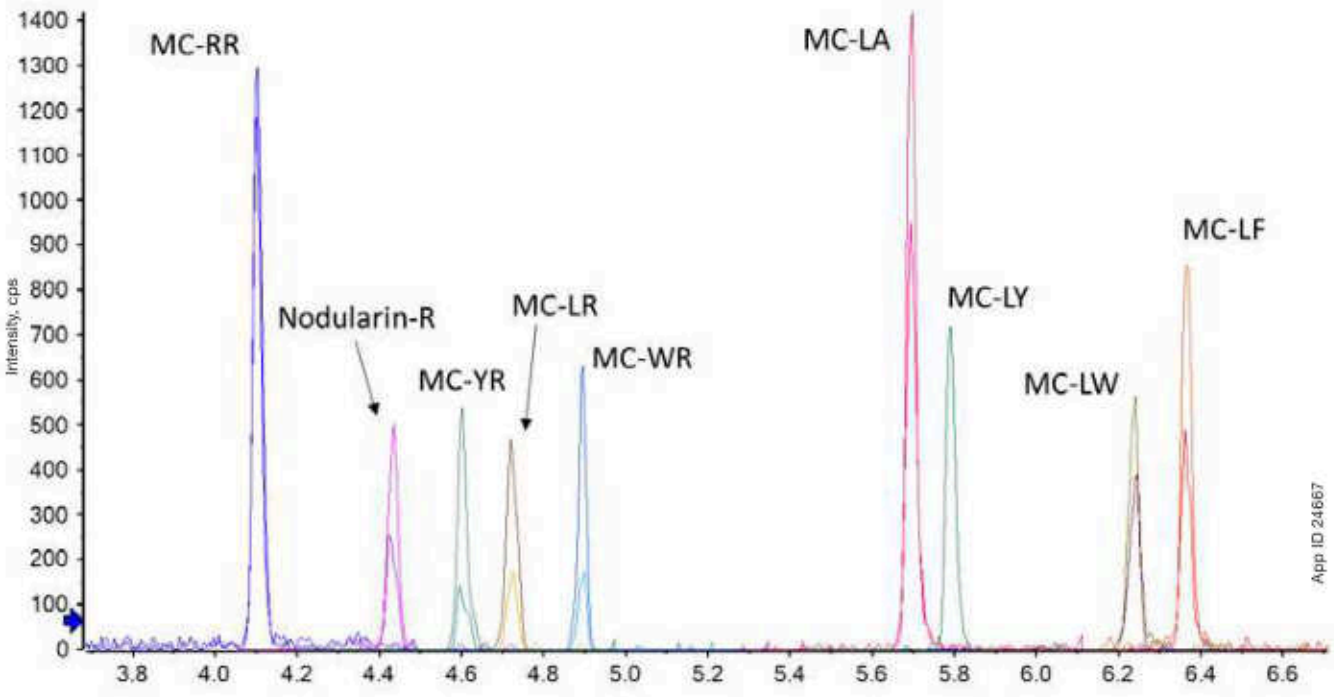
Column: Kinetex® C8 2.6 µm
Dimensions: 100 x 2.1 mm
Part No.: 00D-4497-AN
SecurityGuard™: AJ0-8784
Mobile Phase: A: 0.1 % Formic acid in Water
B: 0.1 % Formic Acid in Acetonitrile

Gradient:

Time (min)	% B
0	5
0.5	5
6	60
7	95
9	95
9.1	5

Flow Rate: 0.5 mL/min
Injection: 20 µL
Temperature: 40 °C
HPLC System: SCIEX ExionLC™ AC
Detection: SCIEX QTRAP® 4500 system with (ESI)
Analytes: MC-RR
Nodularin-R
MC-YR
MC-LR
MC-WR
MC-LA
MC-LY
MC-LW
MC-LF

Parameter	Value
Curtain Gas (CUR)	30 psi
Collision Gas (CAD)	high
IonSpray voltage (IS)	3500 V
Temperature (TEM)	650°C
Nebulizer Gas (GS1)	50 psi
Heater Gas (GS2)	60 psi



Polycyclic Aromatic Hydrocarbons (PAHs)

In Water

SPE Protocol

Cartridge:	Strata® PAH, 1.5 g / 6 mL
Part No.:	8B-S130-7CH
Condition:	10 mL Dichloromethane 10 mL Methanol 20 mL D.I. Water
Load:	100 µL PAH standards (100 µg/mL in Acetonitrile) spiked into 100 mL Water/Acetonitrile (75:25)
Wash:	5 mL Methanol/D.I. Water (50:50)
Dry:	15 seconds under 10" Hg vacuum
Elute:	6 mL Dichloromethane

LC-MS/MS Conditions

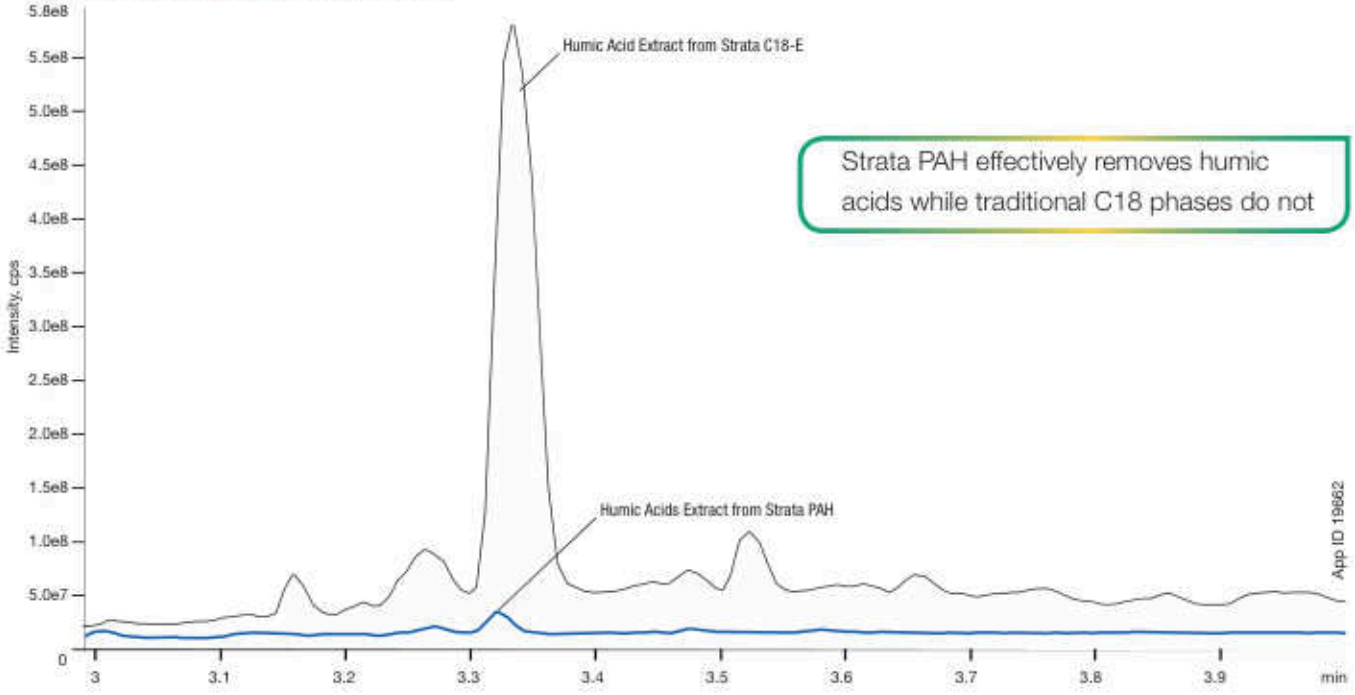
Column: Kinetex® 2.6 µm C8
Dimensions: 50 x 2.1 mm
Part No.: 00B-4497-AN
SecurityGuard™: AJ0-8784
Mobile Phase: A: 5 mM Ammonium acetate
B: Methanol

Gradient:

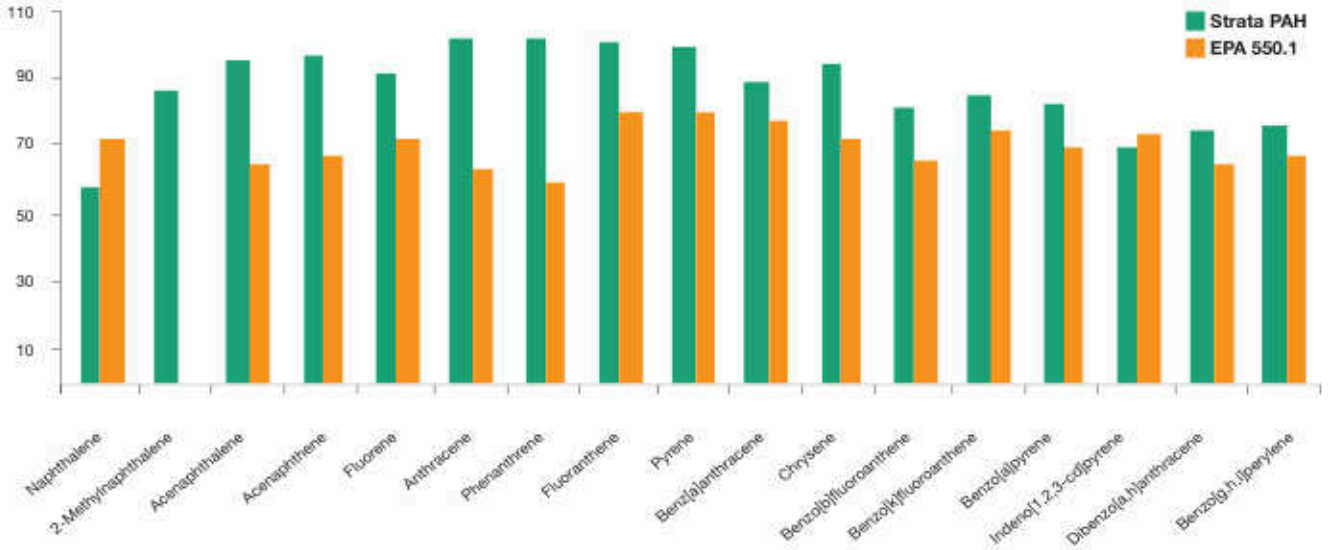
Time (min)	% B
0	15
2	95
6	95
6.01	15

Flow Rate: 0.4 mL/min
Injection: 5 µL
Temperature: Ambient
Backpressure: 210 bar
Detection: Tandem Mass Spectrometer (MS/MS)
Instrument: SCIEX API 4000™
Sample: Humic Acids from Suwannee River

Effective Removal of Humic Acids



PAH Percent Recoveries from Tap Water



Pentachlorophenol

In Ground Water

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® 2.6 µm Polar C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4759-AN
SecurityGuard™: AJ0-9532
Mobile Phase: A: 10 mM Ammonium formate, pH 6.9
B: Methanol

Gradient:

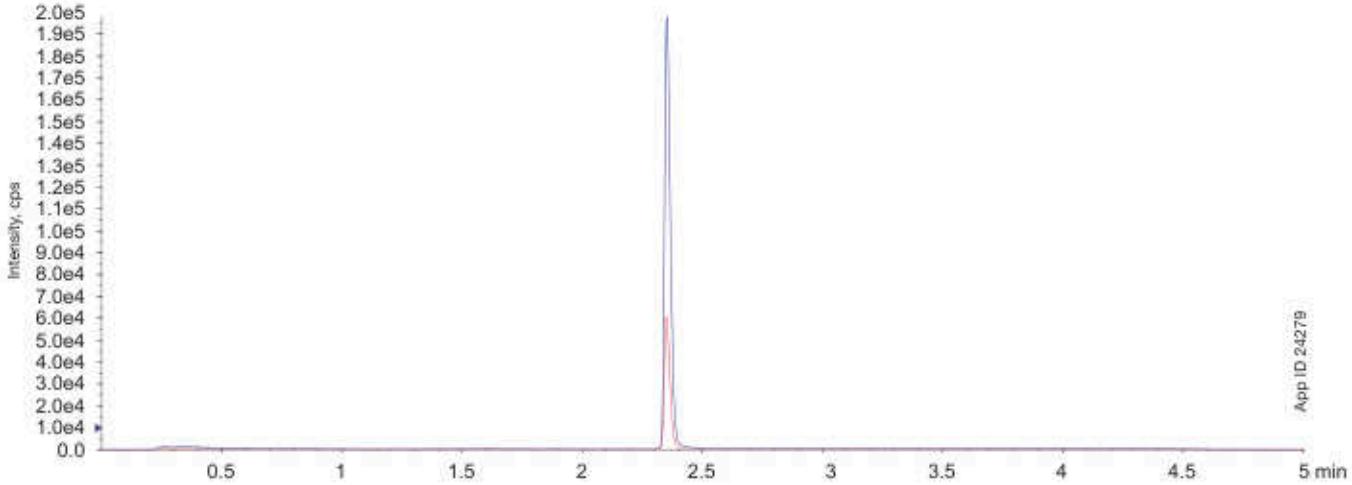
Time (min)	% B
0	30
2	95
3.5	95
3.51	30
5	30

Flow Rate: 0.5 mL/min
Temperature: Ambient
Injection: 5 µL
Detection: MS/MS (SCIEX Triple Quad™ 5000, ESI-)
Sample: Pentachlorophenol

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

Analyte	RT (min)	% Recovery
PCP	2.35	104%

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



Polybrominated Diphenyl Ethers (PBDEs) and Hexabromocyclododecanes (HBCDs)

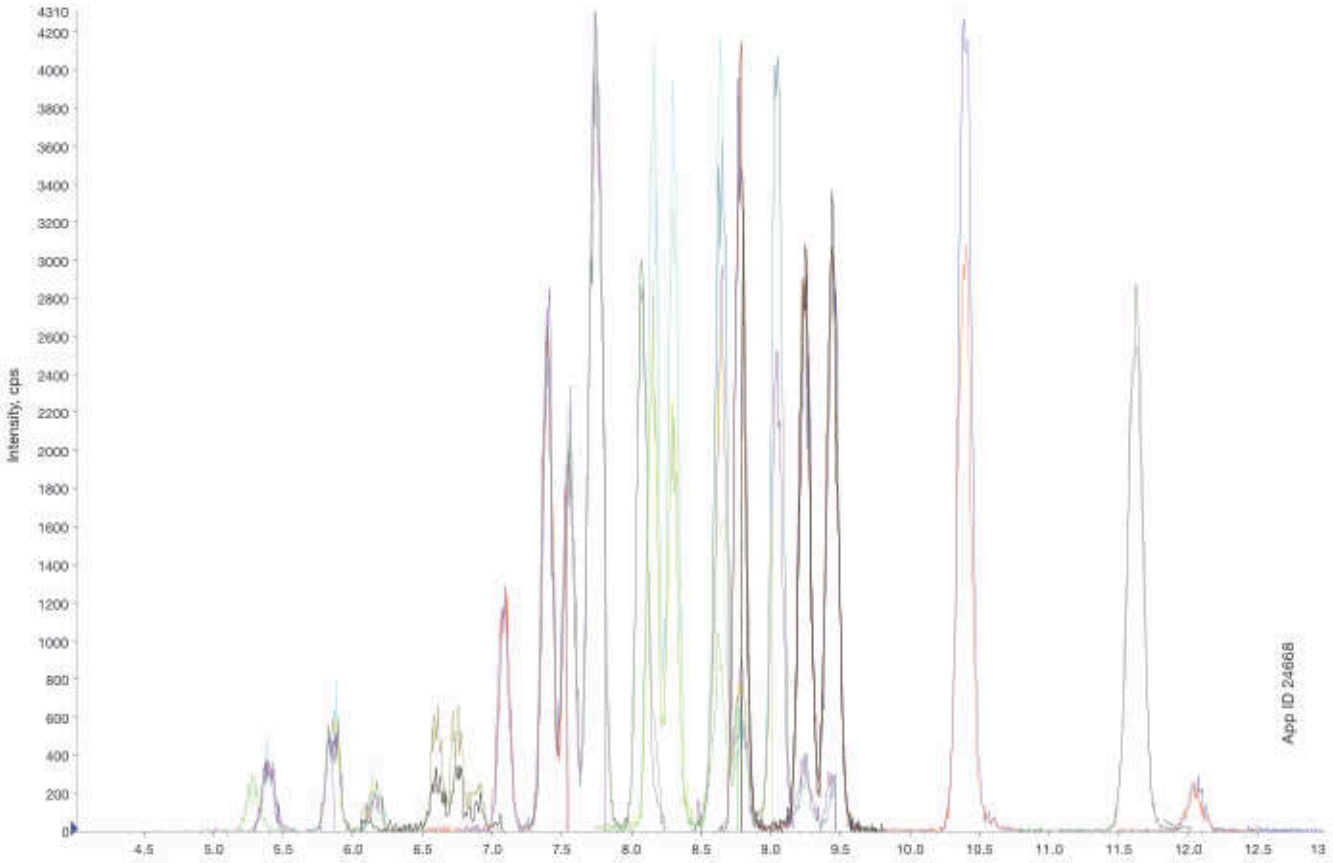
LC-MS/MS Conditions

Column: Kinetex® 2.6 µm C18
Dimensions: 150 x 4.6 mm
Part No.: 00F-4462-E0
SecurityGuard™: AJ0-8768
Mobile Phase: A: Water
B: Methanol

Gradient:

Time (min)	% B
0	90
4	100
13	100

Flow Rate: 0.4 mL/min
Injection: 10 µL
Temperature: 40 °C
HPLC System: SCIEX ExionLC™ AC
Detection: Tandem Mass Spectrometer (MS/MS)
Detector: SCIEX 4000 QTRAP®



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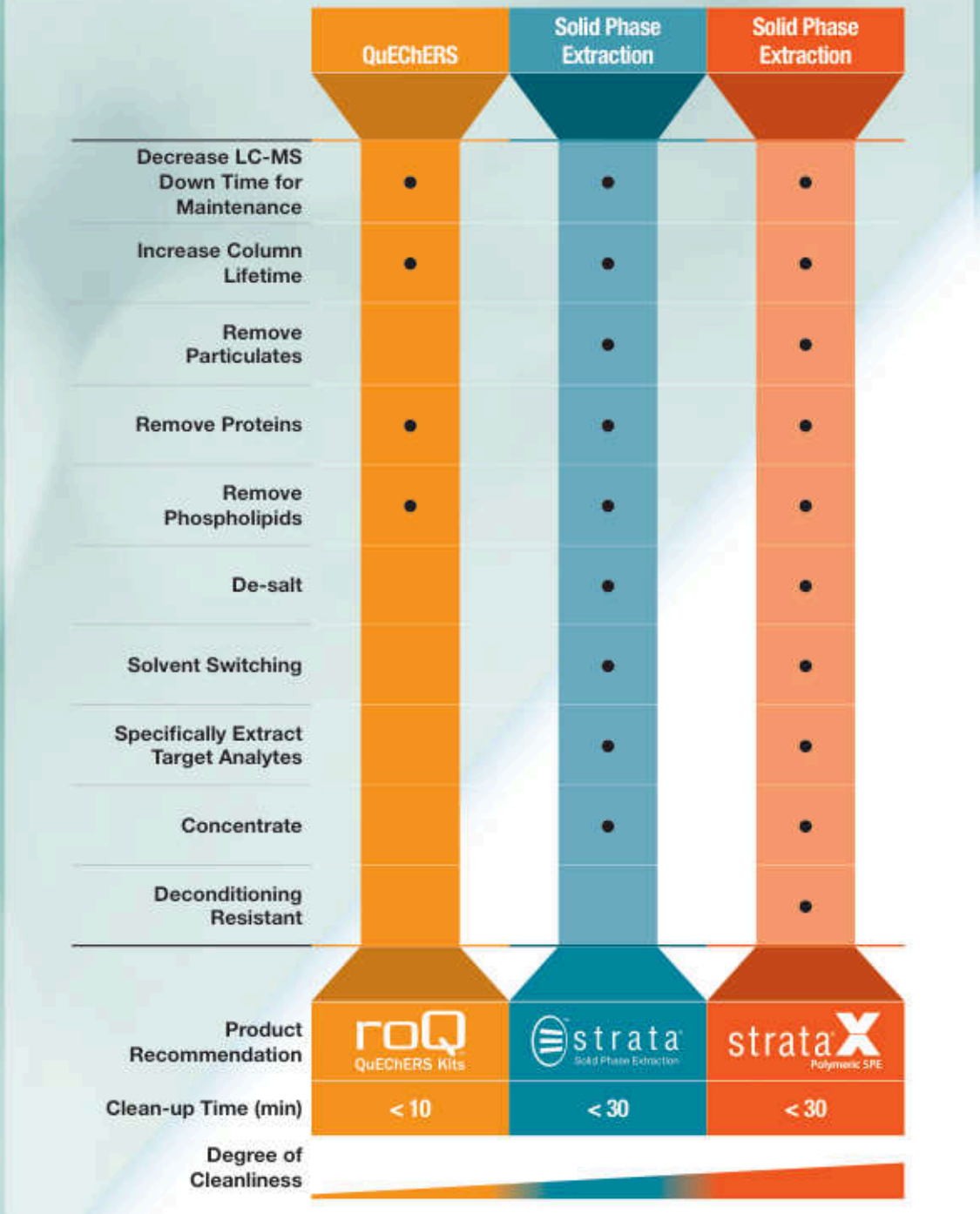
Sample Preparation

Select the Appropriate Sample Prep Technique for Your Environmental Requirements



roQ Extraction Kits

Description	Unit	Part No.
AOAC 2007.01 Method Extraction Kits		
6.0 g $MgSO_4$, 1.5 g NaOAc	50/pk	KS0-8911*
EN 15662 Method Extraction Kits		
4.0 g $MgSO_4$, 1.0 g NaCl, 1.0 g SCTD, 0.5 g SCDS	50/pk	KS0-8909*
Original Non-buffered Method Extraction Kits		
4.0 g $MgSO_4$, 1.0 g NaCl	50/pk	KS0-8910
6.0 g $MgSO_4$, 1.5 g NaCl	50/pk	KS0-8912

*AOAC and EN Extraction Kits also available in traditional non-collared 50 mL centrifuge tubes, Part No.: KS0-8911-NC and KS0-8909-NC

roQ dSPE Kits

Description	Unit	Part No.
2 mL dSPE Kits		
150 mg $MgSO_4$, 25 mg PSA, 25 mg C18E	100/pk	KS0-8913
150 mg $MgSO_4$, 25 mg PSA, 2.5 mg GCB	100/pk	KS0-8914
150 mg, $MgSO_4$, 25 mg PSA, 7.5 mg GCB	100/pk	KS0-8915
150 mg $MgSO_4$, 25 mg PSA	100/pk	KS0-8916
150 mg $MgSO_4$, 50 mg PSA, 50 mg C18E, 50 mg GCB	100/pk	KS0-8917
150 mg $MgSO_4$, 50 mg PSA, 50 mg C18E	100/pk	KS0-8918
150 mg $MgSO_4$, 50 mg PSA, 50 mg GCB	100/pk	KS0-8919
150 mg $MgSO_4$, 50 mg PSA	100/pk	KS0-8920
15 mL dSPE Kits		
900 mg $MgSO_4$, 150 mg PSA, 150 mg C18E	50/pk	KS0-8921
900 mg $MgSO_4$, 150 mg PSA, 15 mg GCB	50/pk	KS0-8922
900 mg $MgSO_4$, 150 mg PSA, 45 mg GCB	50/pk	KS0-8923
900 mg $MgSO_4$, 150 mg PSA	50/pk	KS0-8924
1200 mg $MgSO_4$, 400 mg PSA, 400 mg C18E, 400 mg GCB	50/pk	KS0-8925
1200 mg $MgSO_4$, 400 mg PSA, 400 mg C18E	50/pk	KS0-8926
1200 mg $MgSO_4$, 400 mg PSA, 400 mg GCB	50/pk	KS0-8927
1200 mg $MgSO_4$, 400 mg PSA	50/pk	KS0-8928

roQ Extraction Salt Packets

Salt packets only. Centrifuge tubes not included.

Description	Unit	Part No.
AOAC 2007.01 Method Extraction Packets		
6.0 g $MgSO_4$, 1.5 g NaOAc	50/pk	AH0-9043
EN 15662 Method Extraction Packets		
4.0 g $MgSO_4$, 1.0 g NaCl, 1.0 g SCTD, 0.5 g SCDS	50/pk	AH0-9041
Original Non-Buffered Method Extraction Packets		
4.0 g $MgSO_4$, 1.0 g NaCl	50/pk	AH0-9042
6.0 g $MgSO_4$, 1.5 g NaCl	50/pk	AH0-9044

Bulk roQ QuEChERS Sorbents

Phase	10 g	100 g
C18-E	—	04G-4348
GCB (Graphitized Carbon Black)	04D-4615	04G-4615
PSA	—	04G-4610

Learn more about roQ QuEChERS
www.phenomenex.com/roQ

Environmental Sample Preparation Guide

Download Your Copy Today

www.phenomenex.com/EnviroSP

Strata-X Polymeric SPE Sorbents

Tubes	1 mL (100/box)		3 mL (50/box)			6 mL (30/box)		
Phase	30 mg	60 mg	60 mg	200 mg	500 mg	100 mg	200 mg	500 mg
Strata-X	8B-S100-TAK	8B-S100-UAK	8B-S100-UBJ	8B-S100-FBJ	8B-S100-HBJ	8B-S100-ECH	8B-S100-FCH	8B-S100-HCH
Strata-X-C	8B-S029-TAK	—	8B-S029-UBJ	8B-S029-FBJ	8B-S029-HBJ	8B-S029-ECH	8B-S029-FCH	8B-S029-HCH
Strata-X-CW	8B-S035-TAK	—	8B-S035-UBJ	8B-S035-FBJ	8B-S035-HBJ	8B-S035-ECH	8B-S035-FCH	8B-S035-HCH
Strata-X-A	8B-S123-TAK	—	8B-S123-UBJ	8B-S123-FBJ	8B-S123-HBJ	8B-S123-ECH	8B-S123-FCH	8B-S123-HCH
Strata-X-AW	8B-S038-TAK	—	8B-S038-UBJ	8B-S038-FBJ	8B-S038-HBJ	8B-S038-ECH	8B-S038-FCH	8B-S038-HCH
Strata-XL	8B-S043-TAK	—	8B-S043-UBJ	8B-S043-FBJ	8B-S043-HBJ	8B-S043-ECH	8B-S043-FCH	8B-S043-HCH
Strata-XL-C	8B-S044-TAK	—	8B-S044-UBJ	8B-S044-FBJ	8B-S044-HBJ	8B-S044-ECH	8B-S044-FCH	8B-S044-HCH
Strata-XL-CW	8B-S052-TAK	—	8B-S052-UBJ	8B-S052-FBJ	8B-S052-HBJ	8B-S052-ECH	8B-S052-FCH	8B-S052-HCH
Strata-XL-A	8B-S053-TAK	—	8B-S053-UBJ	8B-S053-FBJ	8B-S053-HBJ	8B-S053-ECH	8B-S053-FCH	8B-S053-HCH
Strata-XL-AW	8B-S051-TAK	—	8B-S051-UBJ	8B-S051-FBJ	8B-S051-HBJ	8B-S051-ECH	8B-S051-FCH	8B-S051-HCH

Giga™ Tubes	12mL		20mL		60mL
Phase	500 mg	1 g	1 mg	2 mg	5 mg
Strata-X	8B-S100-HDG	8B-S100-JDG	8B-S100-JEG	8B-S100-KEG	8B-S100-LFF
Strata-X-C	8B-S029-HDG	8B-S029-JDG	8B-S029-JEG	8B-S029-KEG	8B-S029-LFF
Strata-X-CW	8B-S035-HDG	8B-S035-JDG	8B-S035-JEG	8B-S035-KEG	8B-S035-LFF
Strata-X-A	8B-S123-HDG	8B-S123-JDG	8B-S123-JEG	8B-S123-KEG	8B-S123-LFF
Strata-X-AW	8B-S028-HDG	8B-S038-JDG	8B-S038-JEG	8B-S038-KEG	8B-S038-LFF

Strata Silica-Based SPE Sorbents

Tubes	1 mL (100/box)		3 mL (50/box)			6 mL (30/box)		
Phase	50 mg	100 mg	100 mg	200 mg	500 mg	200 mg	500 mg	1 g
C18-E	8B-S001-DAK	8B-S001-EAK	8B-S001-EBJ	8B-S001-FBJ	8B-S001-HBJ	8B-S001-FCH	8B-S001-HCH	8B-S001-JCH
C18-U	—	8B-S002-EAK	—	8B-S002-FBJ	8B-S002-HBJ	—	8B-S002-HCH	8B-S002-JCH
C18-T	—	8B-S004-EAK	—	8B-S004-FBJ	8B-S004-HBJ	—	8B-S004-HCH	8B-S004-JCH
C8	—	8B-S005-EAK	—	8B-S005-FBJ	8B-S005-HBJ	—	8B-S005-HCH	8B-S005-JCH
Phenyl	—	8B-S006-EAK	—	8B-S006-FBJ	8B-S006-HBJ	—	8B-S006-HCH	8B-S006-JCH
SCX	—	8B-S010-EAK	8B-S010-EBJ	8B-S010-FBJ	8B-S010-HBJ	—	8B-S010-HCH	8B-S010-JCH
WCX	—	8B-S027-EAK	—	8B-S027-FBJ	8B-S027-HBJ	—	8B-S027-HCH	8B-S027-JCH
SAX	—	8B-S008-EAK	8B-S008-EBJ	8B-S008-FBJ	8B-S008-HBJ	—	8B-S008-HCH	8B-S008-JCH
NH_2	—	8B-S009-EAK	—	8B-S009-FBJ	8B-S009-HBJ	—	8B-S009-HCH	8B-S009-JCH
CN	—	8B-S007-EAK	—	8B-S007-FBJ	8B-S007-HBJ	—	8B-S007-HCH	8B-S007-JCH
Si-1	—	8B-S012-EAK	—	8B-S012-FBJ	8B-S012-HBJ	—	8B-S012-HCH	8B-S012-JCH
Florisil®	—	—	—	—	8B-S013-HBJ	—	8B-S013-HCH	8B-S013-JCH
EPH	—	—	—	—	8B-S031-HBJ	—	—	—
AL-N	—	—	—	—	8B-S313-HBJ	—	—	8B-S313-JCH

Giga Tubes	12mL		20mL	60mL	
Phase	500 mg	1 mg	5 mg	5 mg	20 mg
Strata NH_2	8B-S009-HDG	8B-S009-KDG	8B-S009-LEG	8B-S009-MFF	8B-S009-VFF
Strata Alumina	8B-S313-HDG	8B-S313-JDG	8B-S313-LEG	8B-S313-MFF	

On-line SPE

On-line Extraction Cartridges	Dimensions	Part No.
Strata C18	20 x 2.0 mm	00M-S039-B0-CB
Strata C8	20 x 2.0 mm	00M-S101-B0-CB
Strata-X	20 x 2.0 mm	00M-S033-B0-CB
Strata-X-A	20 x 2.0 mm	00M-S132-B0-CB
Strata-X-AW	20 x 2.0 mm	00M-S038-B0-CB
Strata-X-C	20 x 2.0 mm	00M-S048-B0-CB
Strata-X-CW	20 x 2.0 mm	00M-S036-B0-CB
Cartridge Holder	20 mm	CH0-5845

Sample Preparation Accessories

SPE Tube Vacuum Manifold

- Process up to 12 or 24 samples at one time
- Process up to 10 large volume samples at one time
- Female Luer inlets fit all male Luer tipped SPE tubes and cartridges

Part No.	Description	Unit
24-Position Vacuum Manifold		
AH0-6024	SPE 24-Position Vacuum Manifold Set, complete assembly	ea
24-Position Vacuum Manifold Replacement Parts		
AH0-6026	SPE Glass Chamber	ea
AH0-6028	SPE Cover, Gasket and 24 Stopcocks	ea
AH0-6030	SPE Gaskets	2/pk
AH0-6038	SPE Collection Rack Assembly, including plates, legs and clips	ea
AH0-6049	SPE Luer Stopcocks	24/pk
12-Position Vacuum Manifold		
AH0-6023	SPE 12-Position Vacuum Manifold Set, complete assembly	ea
12-Position Vacuum Manifold Replacement Parts		
AH0-6025	SPE 12-Position Glass Chamber	ea
AH0-6027	SPE Cover, Gasket and 12 Stopcocks	ea
AH0-6029	SPE Gaskets	2/pk
AH0-6037	SPE Collection Rack Assembly, including plates, legs and clips	ea
AH0-6052	SPE 12-Position Vacuum Waste Container, polypropylene	10/pk
AH0-6049	SPE Luer Stopcocks	24/pk
10-Position Tall-Boy™ Vacuum Manifold		
AH0-7502	SPE 10-Position Tall-Boy Vacuum Manifold, complete assembly	ea
10 – Position Tall-Boy™ Vacuum Manifold Replacement Parts		
AH0-7503	SPE 10-Position Tall-Boy Vacuum Manifold, Glass Chamber	ea
AH0-7504	SPE 10-Position Tall-Boy Vacuum Manifold, Cover, Gasket and 10 Stopcocks	ea
AH0-6049	SPE Luer Stopcocks	24/pk

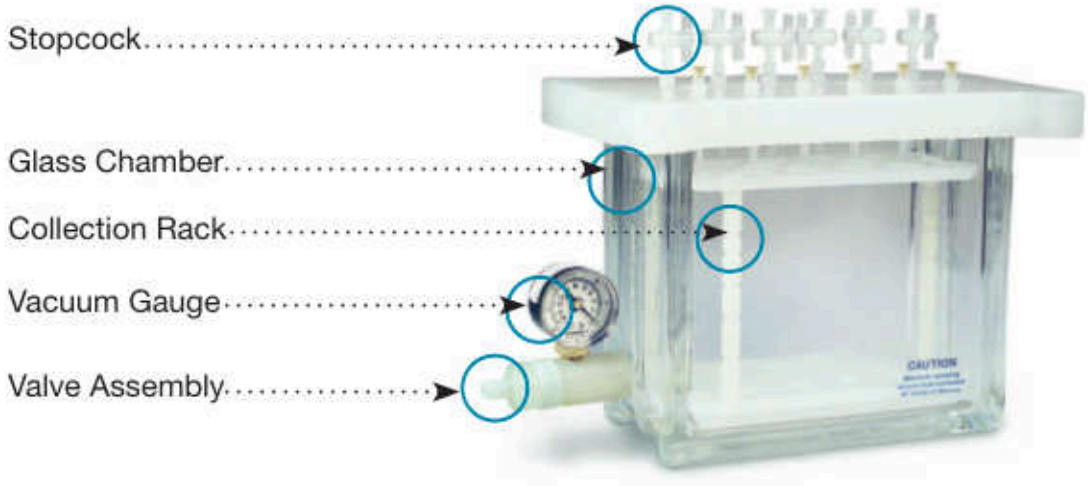
For additional vacuum manifold information, contact Phenomenex technical specialist.

Presston 100 Positive Pressure Manifold

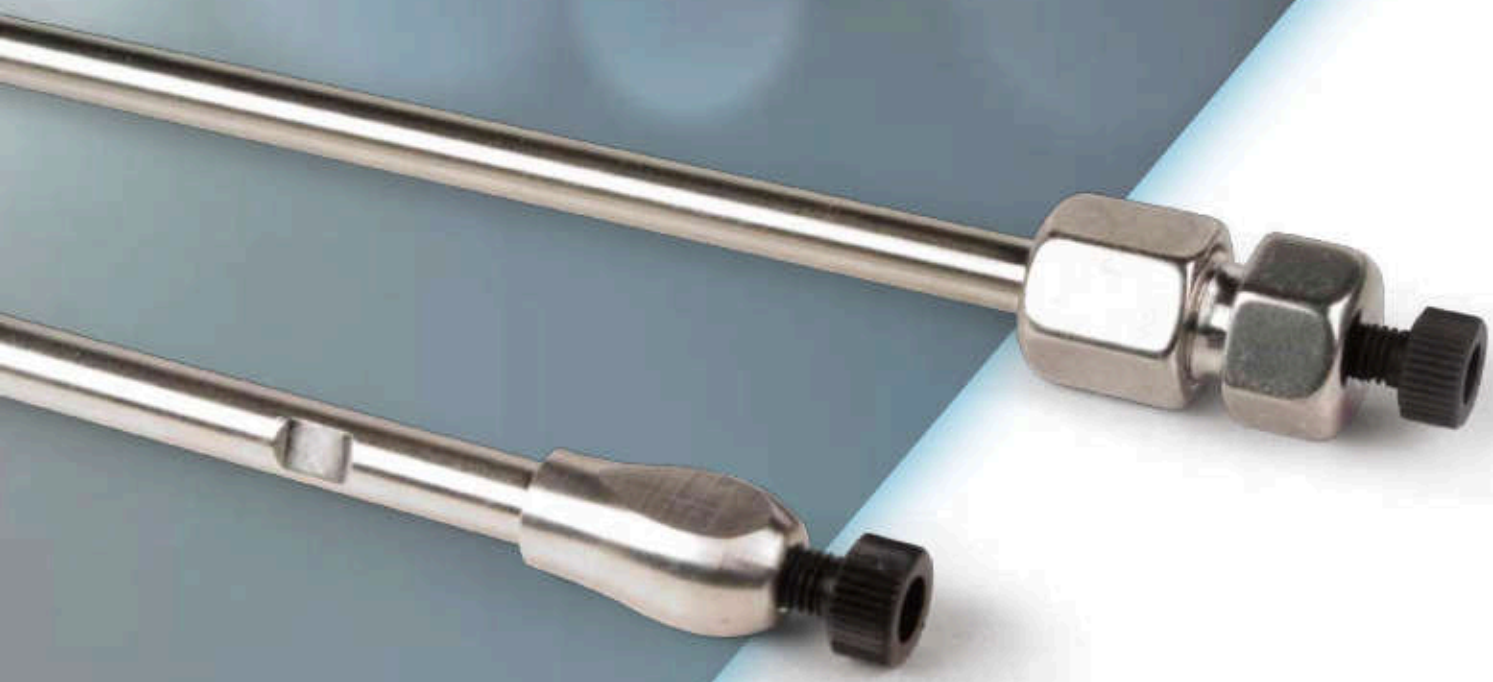
- Provide uniform flow rates when processing samples
- Can process 1, 3, and 6 mL tubes

Part No.	Description	Unit
Presston 100 Positive Pressure Manifold		
AH0-9342	Presston 100 Positive Pressure Manifold, 1 mL Tube Complete Assembly	1/Box
AH0-9347	Presston 100 Positive Pressure Manifold, 3 mL Tube Complete Assembly	1/Box
AH0-9343	Presston 100 Positive Pressure Manifold, 6 mL Tube Complete Assembly	1/Box

presston™ 100



LC Products



Luna

- Exceptionally rugged USP phases
- Easy method scalability with 1.6 µm, 2.5 µm, 3 µm, 5 µm, 10 µm and PREP Media
- Extensive batch traceability and reproducibility data supplied with every column

1.6 µm Microbore Columns (mm)			
Phases	**50 x 1.0**	**100 x 1.0**	**150 x 1.0**
Polar C18	00B-4748-A0	00D-4748-A0	00F-4748-A0
C18	00B-4742-A0	00D-4742-A0	00F-4742-A0

1.6 µm Minibore Columns (mm)					SecurityGuard™ ULTRA Cartridges[1]
Phases	**30 x 2.1**	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**3/pk**
Polar C18	00A-4748-AN	00B-4748-AN	00D-4748-AN	00F-4748-AN	AJ0-9505
PS C18	00A-4752-AN	00B-4752-AN	00D-4752-AN	00F-4752-AN	AJ0-9508
C18	00A-4742-AN	00B-4742-AN	00D-4742-AN	00F-4742-AN	AJ0-9502
					for 2.1 mm ID

3 µm Minibore and MidBore™ Columns (mm)								SecurityGuard Cartridges (mm)
Phases	**30 x 2.1**	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**50 x 3.0**	**100 x 3.0**	**150 x 3.0**	**4 x 2.0***
								/10 pk
Polar C18	00A-4760-AN	00B-4760-AN	00D-4760-AN	00F-4760-AN	00B-4760-Y0	00D-4760-Y0	00F-4760-Y0	AJ0-7600
PS C18	00A-4758-AN	00B-4758-AN	00D-4758-AN	00F-4758-AN	00B-4758-Y0	00D-4758-Y0	00F-4758-Y0	AJ0-7605
								for ID: 2.0-3.0 mm

3 µm Analytical Columns (mm)					SecurityGuard Cartridges (mm)
Phases	**50 x 4.6**	**100 x 4.6**	**150 x 4.6**	**250 x 4.6**	**4 x 3.0***
					/10 pk
Polar C18	00B-4760-E0	00D-4760-E0	00F-4760-E0	00G-4760-E0	AJ0-7601
PS C18	00B-4758-E0	00D-4758-E0	00F-4758-E0	00G-4758-E0	AJ0-7606
					for ID: 3.2-8.0 mm

5 µm Minibore and MidBore™ Columns (mm)								SecurityGuard Cartridges (mm)
Phases	**30 x 2.1**	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**50 x 3.0**	**100 x 3.0**	**150 x 3.0**	**4 x 2.0***
								/10 pk
Polar C18	00A-4754-AN	00B-4754-AN	00D-4754-AN	00F-4754-AN	00B-4754-Y0	00D-4754-Y0	00F-4754-Y0	AJ0-7600
PS C18	00A-4753-AN	00B-4753-AN	00D-4753-AN	00F-4753-AN	00B-4753-Y0	00D-4753-Y0	00F-4753-Y0	AJ0-7605
								for ID: 2.0 - 3.0 mm

5 µm Analytical Columns (mm)					SecurityGuard Cartridges (mm)
Phases	**50 x 4.6**	**100 x 4.6**	**150 x 4.6**	**250 x 4.6**	**4 x 3.0***
					/10 pk
Polar C18	00B-4754-E0	00D-4754-E0	00F-4754-E0	00G-4754-E0	AJ0-7601
PS C18	00B-4753-E0	00D-4753-E0	00F-4753-E0	00G-4753-E0	AJ0-7606
					for ID: 3.2-8.0 mm

5 µm Semi-Preparative Columns (mm)		SecurityGuard Cartridges (mm)
Phases	**250 x 10**	**10 x 10****
		/3 pk
Polar C18	00G-4754-N0	AJ0-9519
PS C18	00G-4753-N0	AJ0-9520
		for ID: 9-16 mm

5 µm Axia Packed Preparative Columns (mm)						SecurityGuard Cartridges (mm)	
Phases	**150 x 21.2**	**250 x 21.2**	**150 x 30**	**250 x 30**	**250 x 50**	**15 x 21.2****	**15 x 30.0***
						/ea	/ea
Polar C18	00F-4754-P0-AX	00G-4754-P0-AX	00F-4754-U0-AX	00G-4754-U0-AX	00G-4754-V0-AX	AJ0-7603	AJ0-7604
PS C18	00F-4753-P0-AX	00G-4753-P0-AX	00F-4753-U0-AX	00G-4753-U0-AX	00G-4753-V0-AX	AJ0-7608	AJ0-7609
						for ID: 18-29 mm	for ID: 30-49 mm

[1] SecurityGuard ULTRA Cartridges require holder, Part No.: AJ0-9000
* SecurityGuard Analytical Cartridges require holder, Part No.: KJ0-4282
***SemiPREP SecurityGuard Cartridges require holder, Part No.: AJ0-9261
**PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8223
* PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8277

Gemini

U.S. Patent Nos. 7, 563, 367 and 8,658,038 and foreign counterparts

Rugged reversed phase HPLC columns that offer extended lifetime at extreme pH conditions and excellent stability for reproducible, high efficiency separations.

- Take full advantage of high and low pH conditions (pH 1-12) to manipulate selectivity
- Expect longer column lifetime
- For analytical and preparative separations of basic and acidic compounds

3 µm Microbore, Minibore and MidBore™ Columns (mm)										SecurityGuard™ Cartridges (mm)
Phases	50 x 1.0	20 x 2.0	30 x 2.0	50 x 2.0	100 x 2.0	150 x 2.0	50 x 3.0	100 x 3.0	150 x 3.0	4 x 2.0*
										/10pk
C18	00B-4439-A0	00M-4439-B0	00A-4439-B0	00B-4439-B0	00D-4439-B0	00F-4439-B0	00B-4439-Y0	00D-4439-Y0	00F-4439-Y0	AJ0-7596
C6-Phenyl	00B-4443-A0	—	00A-4443-B0	00B-4443-B0	00D-4443-B0	00F-4443-B0	00B-4443-Y0	00D-4443-Y0	00F-4443-Y0	AJ0-7914
NX-C18	00B-4453-A0	00M-4453-B0	00A-4453-B0	00B-4453-B0	00D-4453-B0	00F-4453-B0	00B-4453-Y0	00D-4453-Y0	00F-4453-Y0	AJ0-8367
										for ID: 2.0-3.0 mm

3 µm Analytical Columns (mm)						SecurityGuard Cartridges (mm)
Phases	30 x 4.6	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*
						/10pk
C18	00A-4439-E0	00B-4439-E0	00D-4439-E0	00F-4439-E0	00G-4439-E0	AJ0-7597
C6-Phenyl	00A-4443-E0	00B-4443-E0	00D-4443-E0	00F-4443-E0	00G-4443-E0	AJ0-7915
NX-C18	—	00B-4453-E0	00D-4453-E0	00F-4453-E0	00G-4453-E0	AJ0-8368
						for ID: 3.2-8.0 mm

5 µm Minibore and MidBore Columns (mm)									SecurityGuard Cartridges (mm)
Phases	30 x 2.0	50 x 2.0	150 x 2.0	250 x 2.0	50 x 3.0	100 x 3.0	150 x 3.0	250 x 3.0	4 x 2.0*
									/10pk
C18	00A-4435-B0	00B-4435-B0	00F-4435-B0	00G-4435-B0	00B-4435-Y0	00D-4435-Y0	00F-4435-Y0	00G-4435-Y0	AJ0-7596
C6-Phenyl	—	00B-4444-B0	00F-4444-B0	—	00B-4444-Y0	—	00F-4444-Y0	00G-4444-Y0	AJ0-7914
NX-C18	00A-4454-B0	00B-4454-B0	00F-4454-B0	—	00B-4454-Y0	00D-4454-Y0	00F-4454-Y0	00G-4454-Y0	AJ0-8367
									for ID: 2.0-3.0 mm

5 µm Analytical Columns (mm)						SecurityGuard Cartridges (mm)
Phases	30 x 4.6	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*
						/10pk
C18	00A-4435-E0	00B-4435-E0	00D-4435-E0	00F-4435-E0	00G-4435-E0	AJ0-7597
C6-Phenyl	—	00B-4444-E0	00D-4444-E0	00F-4444-E0	00G-4444-E0	AJ0-7915
NX-C18	—	00B-4454-E0	00D-4454-E0	00F-4454-E0	00G-4454-E0	AJ0-8368
						for ID: 3.2-8.0 mm

5 µm Semi-Prep Columns (mm)			SecurityGuard Cartridges (mm)
Phases	150 x 10	250 x 10	10 x 10‡
			/3pk
C18	00F-4435-N0	00G-4435-N0	AJ0-7598
C6-Phenyl	—	00G-4444-N0	AJ0-7314
NX-C18	00F-4454-N0	00G-4454-N0	AJ0-8369
			for ID: 9-16 mm

Additional dimensions available. Contact your Phenomenex HPLC Specialist for more information or visit www.phenomenex.com/gemini

*SecurityGuard™ Analytical Cartridges require holder, Part No.: KJ0-4282

‡SemiPrep SecurityGuard™ Cartridges require holder, Part No.: AJ0-9281

Kinetex

KINETEX® Core-Shell Technology

Performance Gains on any LC System

- Substitute 3 µm and 5 µm columns for 2-3x higher efficiency
- Obtain higher throughput without sacrificing resolution
- Reduce solvent consumption with faster analysis
- Reach lower levels of detection and quantitation

2.6 µm Minibore Columns (mm)						SecurityGuard™ ULTRA Cartridges‡
Phases	30 x 2.1	50 x 2.1	75 x 2.1	100 x 2.1	150 x 2.1	3/pk
EVO C18	00A-4725-AN	00B-4725-AN	—	00D-4725-AN	00F-4725-AN	AJ0-9298
Polar C18	00A-4759-AN	00B-4759-AN	—	00D-4759-AN	00F-4759-AN	AJ0-9532
F5	00A-4723-AN	00B-4723-AN	—	00D-4723-AN	00F-4723-AN	AJ0-9322
Biphenyl	00A-4622-AN	00B-4622-AN	—	00D-4622-AN	00F-4622-AN	AJ0-9209
XB-C18	00A-4496-AN	00B-4496-AN	00C-4496-AN	00D-4496-AN	00F-4496-AN	AJ0-8782
C18	00A-4462-AN	00B-4462-AN	00C-4462-AN	00D-4462-AN	00F-4462-AN	AJ0-8782
C8	00A-4497-AN	00B-4497-AN	00C-4497-AN	00D-4497-AN	00F-4497-AN	AJ0-8784
HILIC	00A-4461-AN	00B-4461-AN	00C-4461-AN	00D-4461-AN	00F-4461-AN	AJ0-8786
Phenyl-Hexyl	00A-4495-AN	00B-4495-AN	00C-4495-AN	00D-4495-AN	00F-4495-AN	AJ0-8788

for ID: 2.1 mm

2.6 µm MidBore™ Columns (mm)						SecurityGuard ULTRA Cartridges‡
Phases	30 x 3.0	50 x 3.0	75 x 3.0	100 x 3.0	150 x 3.0	3/pk
EVO C18	—	00B-4725-Y0	—	00D-4725-Y0	00F-4725-Y0	AJ0-9297
Polar C18	—	00B-4759-Y0	—	00D-4759-Y0	00F-4759-Y0	AJ0-9531
F5	—	00B-4723-Y0	—	00D-4723-Y0	00F-4723-Y0	AJ0-9321
Biphenyl	—	00B-4622-Y0	—	00D-4622-Y0	00F-4622-Y0	AJ0-9208
XB-C18	00A-4496-Y0	00B-4496-Y0	00C-4496-Y0	00D-4496-Y0	00F-4496-Y0	AJ0-8775
C18	00A-4462-Y0	00B-4462-Y0	00C-4462-Y0	00D-4462-Y0	00F-4462-Y0	AJ0-8775
C8	00A-4497-Y0	00B-4497-Y0	00C-4497-Y0	00D-4497-Y0	00F-4497-Y0	AJ0-8777
HILIC	00A-4461-Y0	—	—	—	00F-4461-Y0	AJ0-8779
Phenyl-Hexyl	—	00B-4495-Y0	—	00D-4495-Y0	00F-4495-Y0	AJ0-8781

for ID: 3.0 mm

2.6 µm Analytical Columns (mm)						SecurityGuard ULTRA Cartridges‡
Phases	30 x 4.6	50 x 4.6	75 x 4.6	100 x 4.6	150 x 4.6	3/pk
EVO C18	—	00B-4725-E0	—	00D-4725-E0	00F-4725-E0	AJ0-9296
Polar C18	—	00B-4759-E0	—	00D-4759-E0	00F-4759-E0	AJ0-9530
F5	—	00B-4723-E0	—	00D-4723-E0	00F-4723-E0	AJ0-9320
Biphenyl	—	00B-4622-E0	—	00D-4622-E0	00F-4622-E0	AJ0-9207
XB-C18	—	00B-4496-E0	00C-4496-E0	00D-4496-E0	00F-4496-E0	AJ0-8768
C18	00A-4462-E0	00B-4462-E0	00C-4462-E0	00D-4462-E0	00F-4462-E0	AJ0-8768
C8	—	00B-4497-E0	00C-4497-E0	00D-4497-E0	00F-4497-E0	AJ0-8770
HILIC	—	00B-4461-E0	00C-4461-E0	00D-4461-E0	00F-4461-E0	AJ0-8772
Phenyl-Hexyl	—	00B-4495-E0	00C-4495-E0	00D-4495-E0	00F-4495-E0	AJ0-8774

for ID: 4.6 mm

5 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
EVO C18	00A-4633-AN	00B-4633-AN	00D-4633-AN	00F-4633-AN	AJ0-9298
F5	00A-4724-AN	00B-4724-AN	00D-4724-AN	00F-4724-AN	AJ0-9322
Biphenyl	00A-4627-AN	00B-4627-AN	00D-4627-AN	—	AJ0-9209
XB-C18	00A-4605-AN	00B-4605-AN	00D-4605-AN	—	AJ0-8782
C18	00A-4601-AN	00B-4601-AN	00D-4601-AN	00F-4601-AN	AJ0-8782
C8	—	00B-4608-AN	00D-4608-AN	—	AJ0-8784
Phenyl-Hexyl	—	00B-4603-AN	00D-4603-AN	—	AJ0-8788

for ID: 2.1 mm

5 µm MidBore Columns (mm)				SecurityGuard ULTRA Cartridges‡
Phases	50 x 3.0	100 x 3.0	150 x 3.0	3/pk
EVO C18	00B-4633-Y0	00D-4633-Y0	00F-4633-Y0	AJ0-9297
F5	00B-4724-Y0	00D-4724-Y0	00F-4724-Y0	AJ0-9321
Biphenyl	00B-4627-Y0	00D-4627-Y0	00F-4627-Y0	AJ0-9208
XB-C18	00B-4605-Y0	00D-4605-Y0	00F-4605-Y0	AJ0-8775
C18	00B-4601-Y0	00D-4601-Y0	00F-4601-Y0	AJ0-8775
C8	00B-4608-Y0	00D-4608-Y0	—	AJ0-8777
Phenyl-Hexyl	00B-4603-Y0	00D-4603-Y0	—	AJ0-8781

for ID: 3.0 mm

5 µm Analytical Columns (mm)					SecurityGuard ULTRA Cartridges‡
Phases	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	3/pk
EVO C18	00B-4633-E0	00D-4633-E0	00F-4633-E0	00G-4633-E0	AJ0-9296
F5	00B-4724-E0	00D-4724-E0	00F-4724-E0	00G-4724-E0	AJ0-9320
Biphenyl	00B-4627-E0	00D-4627-E0	00F-4627-E0	00G-4627-E0	AJ0-9207
XB-C18	00B-4605-E0	00D-4605-E0	00F-4605-E0	00G-4605-E0	AJ0-8768
C18	00B-4601-E0	00D-4601-E0	00F-4601-E0	00G-4601-E0	AJ0-8768
C8	00B-4608-E0	00D-4608-E0	00F-4608-E0	00G-4608-E0	AJ0-8770
Phenyl-Hexyl	00B-4603-E0	00D-4603-E0	00F-4603-E0	00G-4603-E0	AJ0-8774

for ID: 4.6 mm

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

Available in sub-2 µm particle sizes. Additional dimensions available. Contact your Phenomenex HPLC Specialist for more information or visit www.phenomenex.com/kinetex

Ordering Information

Synergi

synergi™
Full Range Selectivity LC Columns

Full range selectivity for reversed phase separation

- 4 unique phases to optimize even the most challenging separations
- Available in 2.5 µm and 4 µm particles for high efficiency

Fast LC Solutions

2.5 µm High Speed Technology (HST) Columns (mm)						
Phases	**30 x 2.0**	**50 x 2.0**	**100 x 2.0**	**50 x 3.0**	**100 x 3.0**	**50 x 4.6**
Max-RP	00A-4372-B0	00B-4372-B0	00D-4372-B0	00B-4372-Y0	00D-4372-Y0	00D-4372-E0
Hydro-RP	00A-4387-B0	00B-4387-B0	00D-4387-B0	00B-4387-Y0	00D-4387-Y0	00D-4387-E0
Polar-RP	00A-4371-B0	00B-4371-B0	00D-4371-B0	00B-4371-Y0	00D-4371-Y0	00D-4371-E0
Fusion-RP	00A-4423-B0	00B-4423-B0	00D-4423-B0	00B-4423-Y0	00D-4423-Y0	00D-4423-E0

2.5 µm MercuryMS™ LC/MS Cartridges (mm)					Columns (mm)	
Phases	**10 x 2.0**	**10 x 4.0**	**20 x 2.0**	**20 x 4.0**	**20 x 2.0**	**20 x 4.0**
Max-RP	00N-4372-B0-CE	—	00M-4372-B0-CE	00M-4372-D0-CE	—	—
Hydro-RP	00N-4387-B0-CE	00N-4387-D0-CE	00M-4387-B0-CE	—	—	—
Polar-RP	00N-4371-B0-CE	00N-4371-D0-CE	00M-4371-B0-CE	—	00M-4371-B0	—
Fusion-RP	00N-4423-B0-CE	—	00M-4423-B0-CE	00M-4423-D0-CE	00M-4423-B0	00M-4423-D0

For 10 mm cartridge holder: CH0-7187
For 20 mm cartridge holder: CH0-7188

Capillary Columns

4 µm Synergi Capillary Columns (mm)					Guard Columns (mm)
Phases	**50 x 0.30**	**150 x 0.30**	**150 x 0.50**	**250 x 0.50**	**20 x 0.30**
Max-RP	00B-4337-AC	—	—	—	03M-4337-AC
Hydro-RP	00B-4375-AC	00F-4375-AC	—	00G-4375-AF	03M-4375-AC
Fusion-RP	00B-4424-AC	00F-4424-AC	00F-4424-AF	—	03M-4424-AC

Analytical Columns

4 µm Microbore and Minibore Columns (mm)								SecurityGuard™ Cartridges (mm)
Phases	**50 x 1.0**	**150 x 1.0**	**30 x 2.0**	**50 x 2.0**	**75 x 2.0**	**150 x 2.0**	**250 x 2.0**	**4 x 2.0***
								/10pk
Max-RP	00B-4337-A0	00F-4337-A0	00A-4337-B0	00B-4337-B0	00C-4337-B0	00F-4337-B0	00G-4337-B0	AJ0-6073
Hydro-RP	00B-4375-A0	00F-4375-A0	00A-4375-B0	00B-4375-B0	00C-4375-B0	00F-4375-B0	00G-4375-B0	AJ0-7510
Polar-RP	00B-4336-A0	00F-4336-A0	00A-4336-B0	00B-4336-B0	00C-4336-B0	00F-4336-B0	00G-4336-B0	AJ0-6075
Fusion-RP	00B-4424-A0	00F-4424-A0	00A-4424-B0	00B-4424-B0	00C-4424-B0	00F-4424-B0	00G-4424-B0	AJ0-7556

for ID: 2.0-3.0 mm

4 µm MidBore™ Columns (mm)					SecurityGuard Cartridges (mm)
Phases	**30 x 3.0**	**50 x 3.0**	**150 x 3.0**	**250 x 3.0**	**4 x 2.0***
					/10pk
Max-RP	—	00B-4337-Y0	00F-4337-Y0	00G-4337-Y0	AJ0-6073
Hydro-RP	—	00B-4375-Y0	00F-4375-Y0	00G-4375-Y0	AJ0-7510
Polar-RP	00A-4336-Y0	00B-4336-Y0	00F-4336-Y0	00G-4336-Y0	AJ0-6075
Fusion-RP	—	00B-4424-Y0	00F-4424-Y0	00G-4424-Y0	AJ0-7556

for ID: 2.0-3.0 mm

4 µm Analytical Columns (mm)						SecurityGuard Cartridges (mm)
Phases	**30 x 4.6**	**50 x 4.6**	**75 x 4.6**	**150 x 4.6**	**250 x 4.6**	**4 x 3.0***
						/10pk
Max-RP	00A-4337-E0	00B-4337-E0	00C-4337-E0	00F-4337-E0	00G-4337-E0	AJ0-6074
Hydro-RP	00A-4375-E0	00B-4375-E0	00C-4375-E0	00F-4375-E0	00G-4375-E0	AJ0-7511
Polar-RP	00A-4336-E0	00B-4336-E0	00C-4336-E0	00F-4336-E0	00G-4336-E0	AJ0-6076
Fusion-RP	—	00B-4424-E0	00C-4424-E0	00F-4424-E0	00G-4424-E0	AJ0-7557

for ID: 3.2-8.0 mm

*SecurityGuard™ Analytical Cartridges require holder, Part No.: KJ0-4282

Additional dimensions available. Contact your Phenomenex HPLC Specialist for more information or visit www.phenomenex.com/synergi

Phenex

Syringe Filters

Particulates from environmental matrices can damage expensive equipment, valves, columns and pumps. They can also lead to erratic analytical results. Prefiltering samples prior to analysis is critical in preventing column and frit blockage, undue wear on valve seals, and abnormally high operating pressures.

- Increase column lifetime (save money!)
- Ensure more accurate, consistent results
- Eliminate damaging microparticulates

Syringe Filter Applications and Recommended Membranes

Application / Sample	Recommended Filter	First Alternative	Second Alternative
HPLC and GC Sample Prep	RC	PTFE	PES
Aggressive or Pure Organic Solvents	PTFE	RC	NY
Protein Analysis / Biological Samples	PES	RC	GF/CA
High Particulate Loads	GF/NY	GF + RC	PTFE
Environmental Methods	GF/NY	RC	PTFE
Food and Beverage	GF/NY	RC	PTFE
Clinical / Toxicology	RC	PES	NY
Dissolution Testing	GF/NY	RC	PTFE
Ion Chromatography	RC	PES	PTFE
Trace Metals (ICP-MS, AAS)	RC	PES	NY
Capillary Electrophoresis (CE)	RC	PES	NY
Tissue Cultures, Media, Buffers	GF/CA	PES	RC

For high load and particulate-laden samples you may consider placing a Glass Fiber (GF) pre-filter, either integrated with the membrane as one unit (Phenex-GF/NY or -GF/CA) or in series with the membrane syringe filter of your choice

Phenex Ordering Information[1]

Phenex Syringe Filters	4 mm Diameter for ≤ 2 mL sample volumes		15 mm Diameter for 2 – 10 mL sample volumes		25 - 28 mm Diameter for 10 – 100 mL sample volumes	
Membrane Type/Size	Part No.	Unit	Part No.	Unit	Part No.	Unit
0.20 µm						
Phenex-RC (Regenerated Cellulose)	AF0-3203-52	500/pk	AF0-2203-52	500/pk	AF0-8203-52 [5]	500/pk
Phenex-PES [3] (Polyethersulfone)	—	—	—	—	AF0-8208-52 [7]	500/pk
Phenex-PTFE [6] (Polytetrafluoroethylene)	AF0-3202-52	500/pk	AF0-2202-52	500/pk	AF0-1202-52	500/pk
Phenex-NY (Nylon)	AF3-3207-52	500/pk	AF0-2207-52	500/pk	AF0-1207-52	500/pk
Phenex-GF/NY [2] (Glass Fiber/Nylon)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a Nylon (NY) membrane. Excellent for filtration of particle-laden samples, such as foods and beverages, environmental, biofuels, and dissolution samples. Use less hand pressure to filter even the most difficult samples. Outlet connection is luer lock.				AF0-1A47-52 [7]	500/pk
Phenex-GF/CA [2,3,4] (Glass Fiber/Cellulose Acetate)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a CA membrane. Excellent for filtration of tissue culture media, general biological sample filtration and clarification. Outlet connection is luer lock.				AF0-8A09-52 [7]	500/pk
0.45 µm						
Phenex-RC (Regenerated Cellulose)	AF0-3103-52	500/pk	AF0-2103-52	500/pk	AF0-8103-52 [5]	500/pk
Phenex-PES [3] (Polyethersulfone)	—	—	—	—	AF0-8108-52 [7]	500/pk
Phenex-PTFE [6] (Polytetrafluoroethylene)	AF0-3102-52	500/pk	AF0-2102-52	500/pk	AF0-1102-52	500/pk
Phenex-NY (Nylon)	AF3-3107-52	500/pk	AF0-2107-52	500/pk	AF0-1107-52	500/pk
Phenex-GF/NY [2] (Glass Fiber/Nylon)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a Nylon (NY) membrane. Excellent for filtration of particle-laden samples, such as foods and beverages, environmental, biofuels, and dissolution samples. Use less hand pressure to filter even the most difficult samples. Outlet connection is luer lock.				AF0-1B47-52 [7]	500/pk
Phenex-GF/CA [2,3,4] (Glass Fiber/Cellulose Acetate)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a CA membrane. Excellent for filtration of tissue culture media, general biological sample filtration and clarification. Outlet connection is luer lock.				AF0-8B09-52 [7]	500/pk
1.20 µm						
Phenex-GF [2,3] (Glass Fiber)	Prefiltration of heavily contaminated or highly viscous samples. When used in-series preceding a membrane filter, clogging of the membrane filter is prevented and sample clean up is optimized. Outlet connection is luer lock.				AF0-8515-52 [7]	500/pk

1. Larger quantity purchases at significant savings are available.
2. Glass fiber filters are 28 mm diameter and made of borosilicate. They will remove 90 % of all particles >1.2 µm.
3. Housing material is methacrylate butadiene styrene (MBS) polymerisate. Also known as Cyrolite®.
4. Cellulose acetate is surfactant-free.
5. 26 mm diameter.
6. Hydrophobic membrane. Can be made hydrophilic by pre-wetting with IPA.
7. 28 mm diameter.
8. Additional dimensions and membrane types are available. Please contact your local Phenomenex technical consultant or distributor for availability or assistance.

Above syringe filters are non-sterile. Housing is made of medical-grade polypropylene (PP), and offer luer lock inlet/slip outlet connections, unless otherwise indicated.

HPLC/UHPLC Column Protection

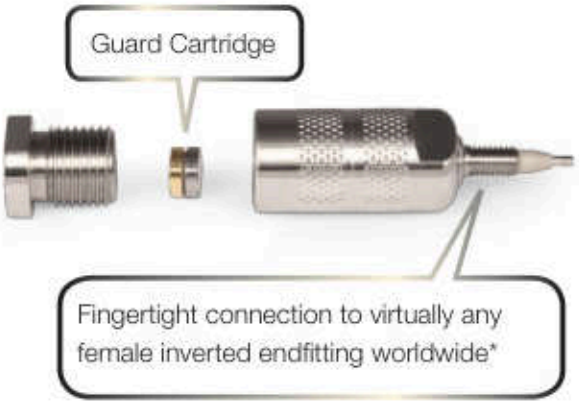
U.S. Patent No. 6, 162, 362

SecurityGuard

Column Protection for UHPLC, HPLC, SFC to PREP

- Protect HPLC columns and extend lifetime
- Virtually no change in chromatography
- Available in analytical, semi-prep, and preparative sizes
- Simple to use

SecurityGuard™ Standard
HPLC Column Protection



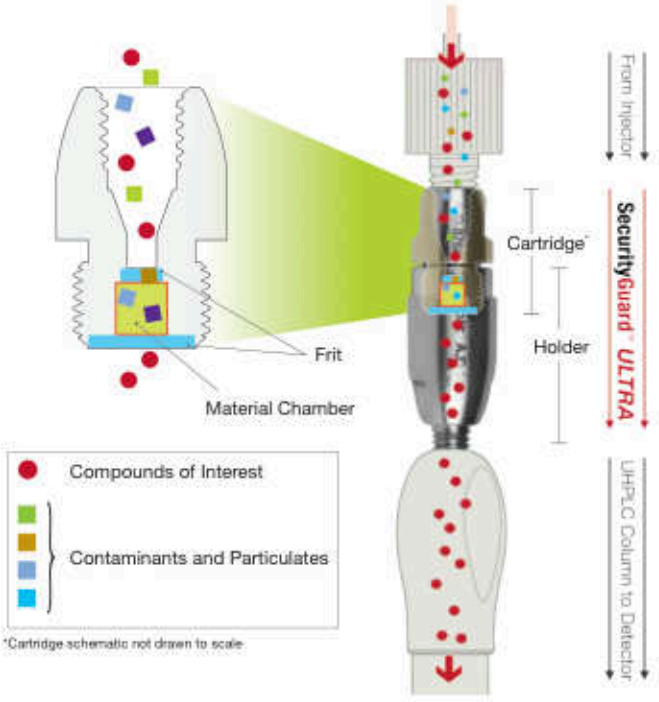
*Feature applies to traditional analytical-sized guard system only, and does not apply to SemiPrep or PREP guard cartridges.

SecurityGuard ULTRA

UHPLC Column Protection System for Core-Shell and Sub-2 µm Columns

- Increases column lifetime of virtually all manufacturers' UHPLC, sub-2 µm, and core-shell columns
- Offers more reproducible chromatography
- For pressures up to 20,000 psi (1,378 bar)

SecurityGuard™ ULTRA
UHPLC Column Protection



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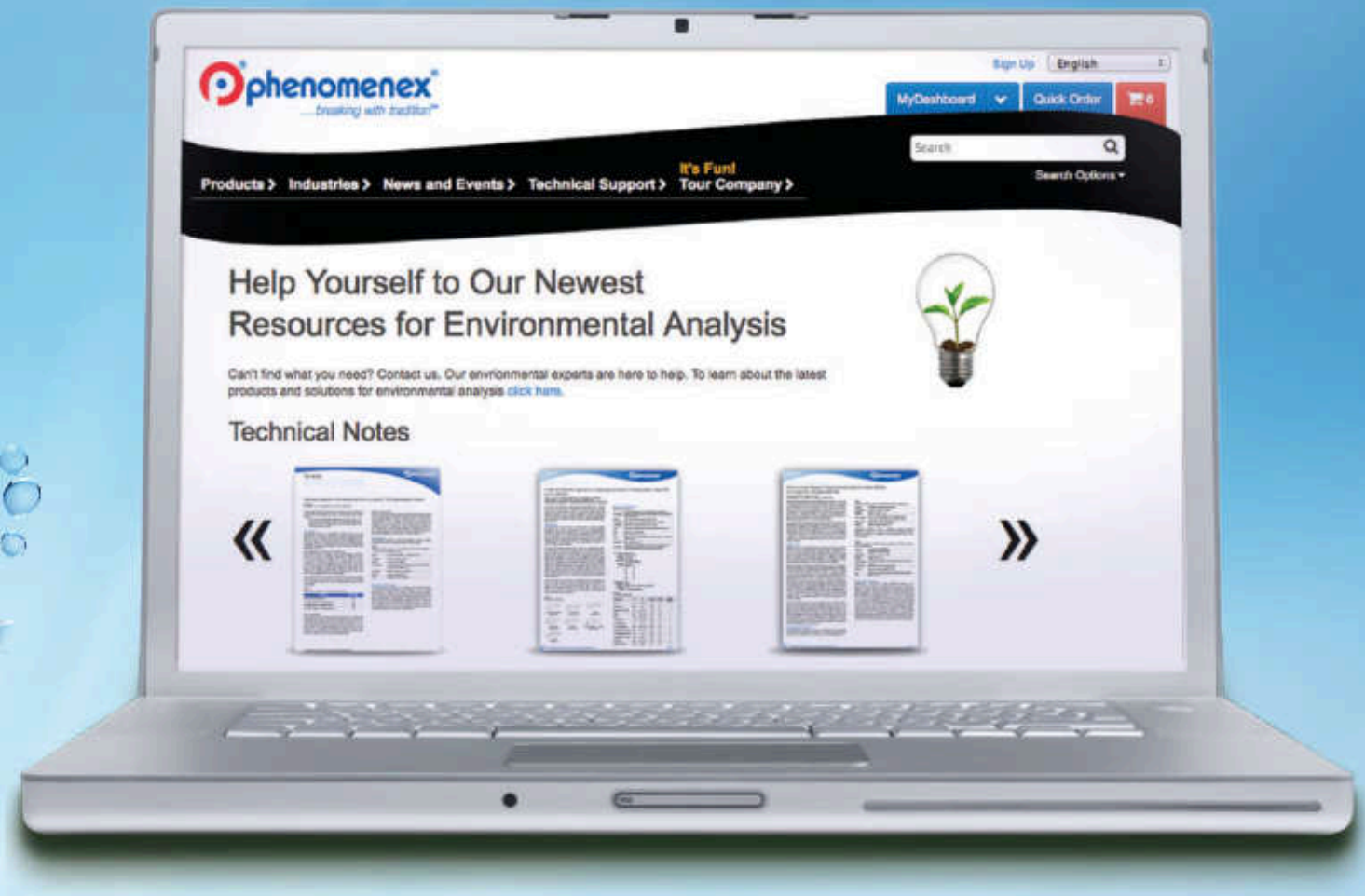
www.phenomenex.com/Environmental



LC-MS/MS

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