Waters™

Nota applicativa

Emerging Contaminant of Concern - Endocrine Disruptors

Waters Corporation

This is an Application Brief and does not contain a detailed Experimental section.

Abstract

This application brief demonstrates the emerging contaminant of concern, i.e endocrine disruptors.

Introduction

Emerging evidence from wildlife and laboratory studies indicates that some chemicals may interfere with the endocrine system. Compounds identified as endocrine-disrupting chemicals (EDCs) include pesticides, polychlorinated biphenyls (PCBs), dioxins, furans, alkylphenols, and steroid hormones.

Experimental

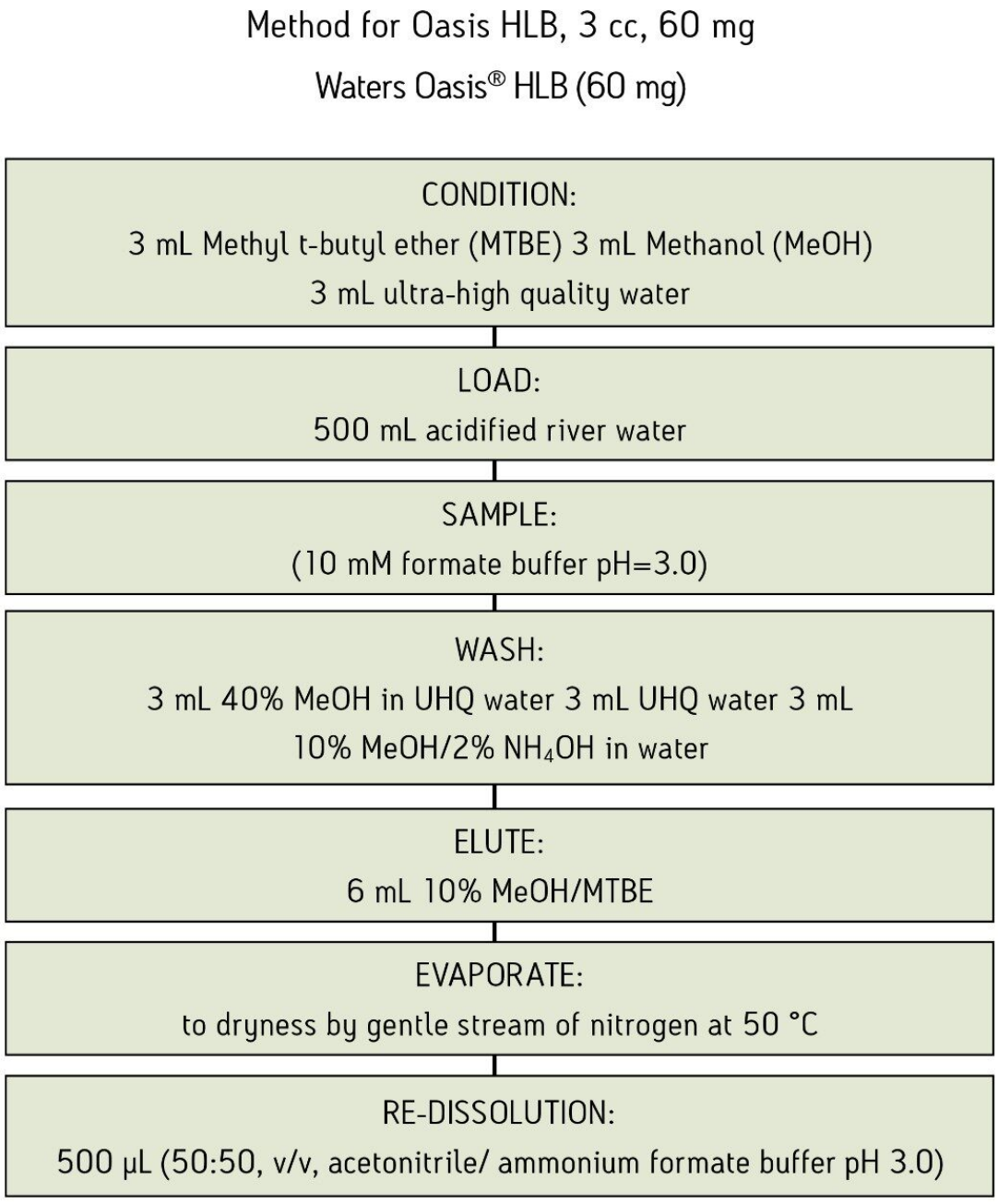
HPLC Conditions

Instrument:	Waters Alliance 2690 HPLC System
Mobile phase A:	Methanol
Mobile phase B:	Water
Column:	Waters SunFire C_{18}, 3.5 µm, 2.1 x 50 mm
Flow rate:	0.2 mL/min
Injection volume:	20 µL
Gradient:	Time 0 60% A; 40% B Time 10 min 100% A Time 18 min 100% A Time 20 min 60% A; 40% B Time 23 min 60% A; 40% B

MS Conditions

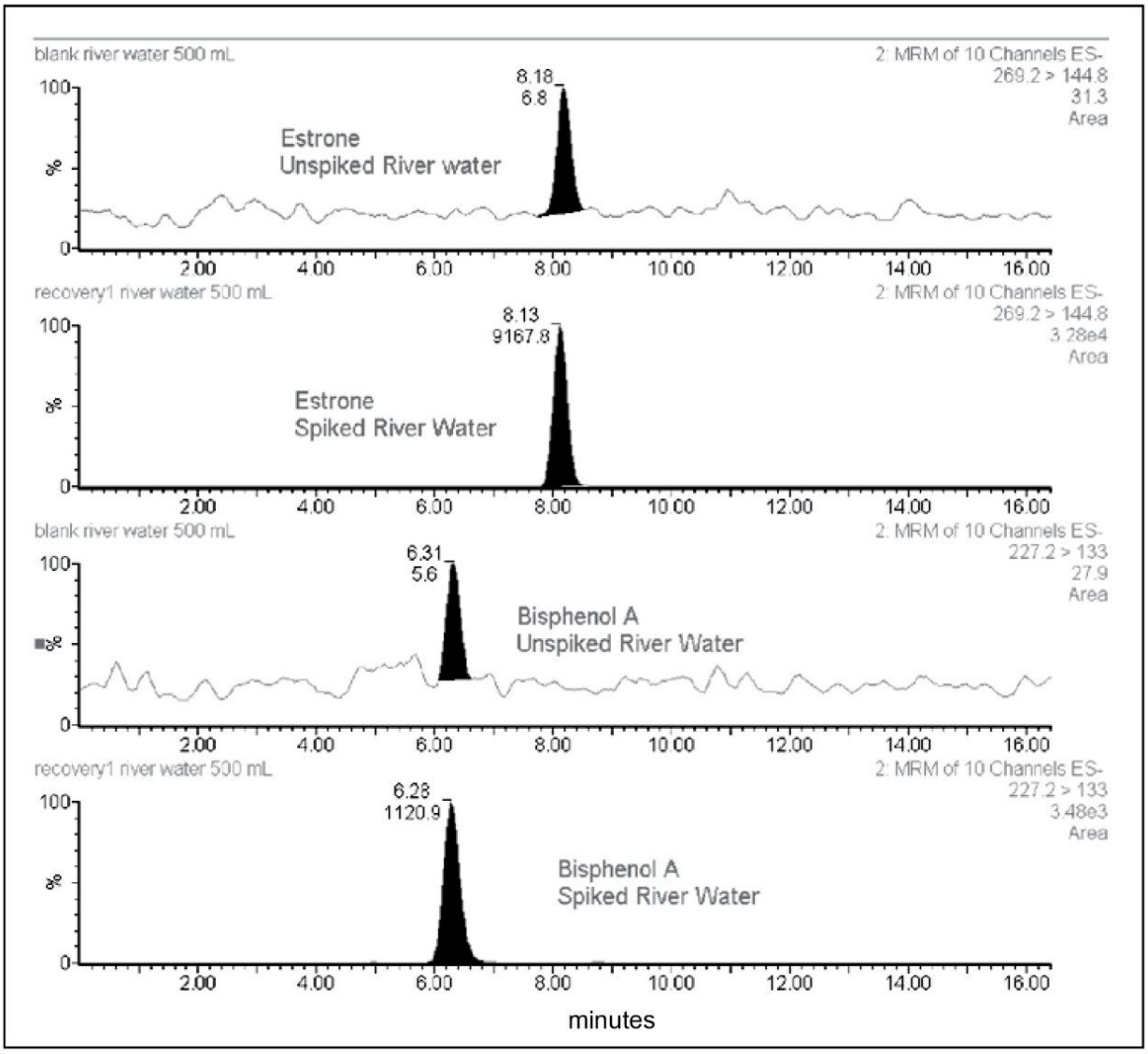
A Waters Quattro micro Triple Quadrupole Mass Spectrometer was operated in the negative ion electrospray mode. Nitrogen gas, at a flow rate of 450 L/hr and a temperature of 250 °C, was used for spray desolvation. The source temperature was maintained at 120 °C and the capillary voltage was 3.2 kV.

Sample Preparation

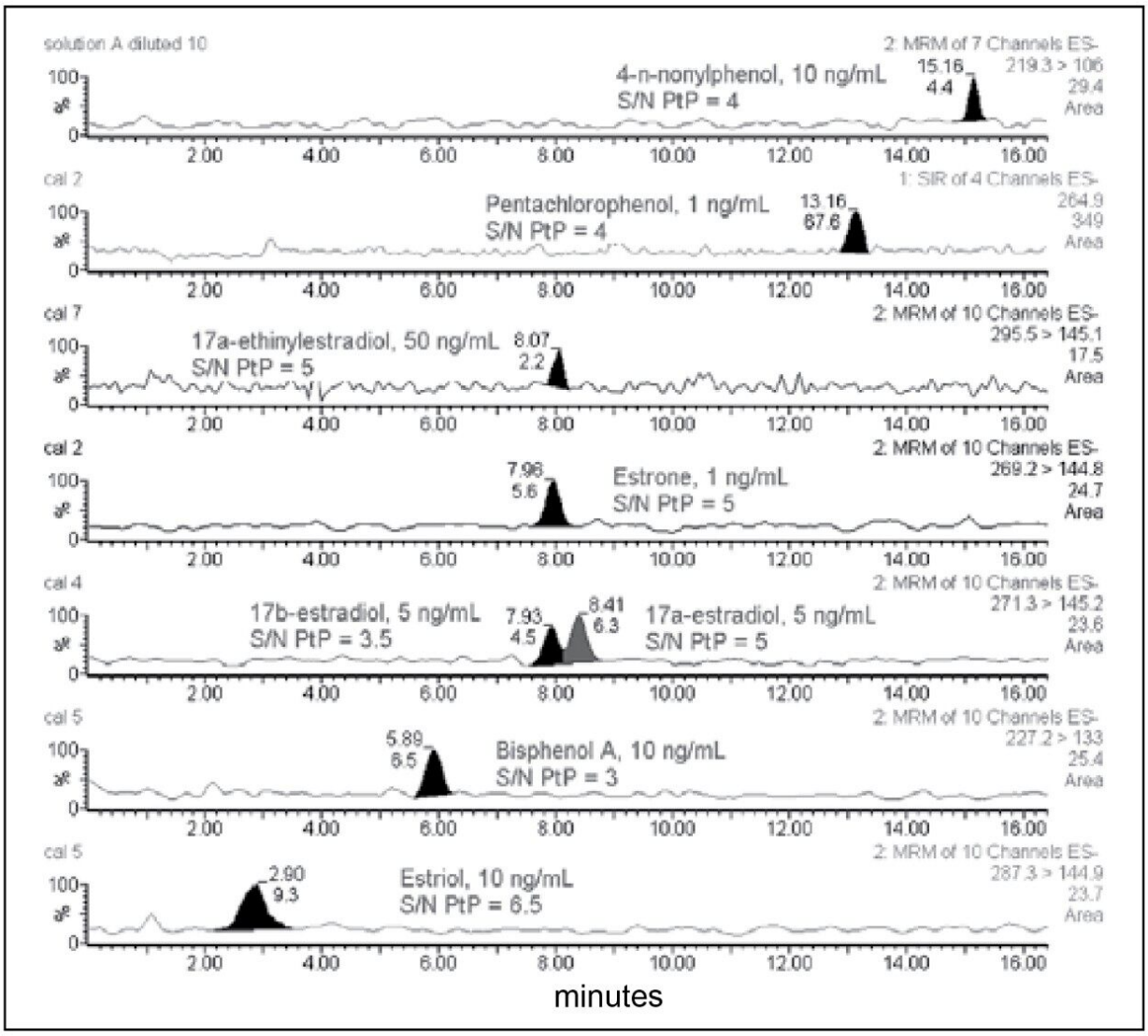


Compound	Fw	Precursor Ion m/z	Product Ions m/z	Corresponding structure of product ions	Cone Voltage (V)	Collision Energy (eV)
Estriol	288.4	287.3	**144.9;** 171.1	**[M - C8H14O2]**-; [M - C6H12O2]	50	40
Bisphenol A	228.3	227.2	**133.0;** 210.8	**[M - C6H6O]**-	37	33
17α-Ethinylestradiol	296.4	295.5	**145.1;** 199.5	**[M - C10H14O]-;** [M - C6H9O]-	37	49
17α-Estradiol	272.4	271.3	**145.2;** 183.1	**[M - C10H14O]-;** [M - C5H12O]-	37	45
17β-Estradiol	272.4	271.3	**145.2;** 183.1	**[M - C8H14O]-;** [M - C5H12O]-	37	45
Estrone	270.4	269.2	**144.8;** 143	**[M - C8H12O]-;** [M - C8H14O]-	37	33
4-n-Nonylphenol	220.4	219.3	**106.0;** 118.7	**[M - C8H17]-;** [M - C7H17]-	40	34
Pentachlorophenol	266.3	SIR of **264.9;** 263.0; 267.1; 269.0			40	-

MRM parameters.



The presence of bisphenol A and estron in unspiked river water samples.



Chromatograms of spiked river water samples.

Related Documents

- Environmental System Solutions - 720003379EN <https://www.waters.com/webassets/cms/library/docs/720003379en.pdf>
- A Sensitive Method for the Determination of Endocrine-Disrupting Compounds in River Waters by LC-MS/MS - 720001296EN <https://www.waters.com/nextgen/us/en/library/application-notes/2007/a-sensitive-method-for-the-determination-of-endocrine-disrupting-compounds-in-river-water-by-lc-ms-ms.html>
- Endocrine Disruptors – General SPE Guidelines - WA31764.73 <

https://www.waters.com/webassets/cms/library/docs/oasis73.pdf>

Featured Products

Alliance HPLC System <https://www.waters.com/534293>

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