Waters™

Application Note

EPA Method 532.0 Determination of Phenylurea Compounds in Drinking Water by Solid Phase Extraction and High Performance Liquid Chromatography with UV Detection

Waters Corporation

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

Abstract

This application brief demonstrates the determination of phenylurea compounds in drinking water by solid phase extraction and High Performance Liquid Chromatography with UV detection.

Introduction

Phenylurea pesticides that were introduced worldwide in the 1950s are used commercially on a wide range of food crops. Subsequently determined to possess a significant toxicological risk, the agricultural runoff of these compounds may be found in drinking water supplies. The United States Environmental Protection Agency (US EPA) requires that drinking water and raw surface water be monitored for the presence of phenylurea pesticides and related compounds using EPA Method 532.0. The European Union (EU) regulation regarding drinking water (EC Directive 98/83/EC), provides a general rule for pesticides and metabolites. This regulation limits the maximum admissible concentration (MAC) at 0.1 ppb for each individual component, with the total concentration not to exceed 0.5 ppb.

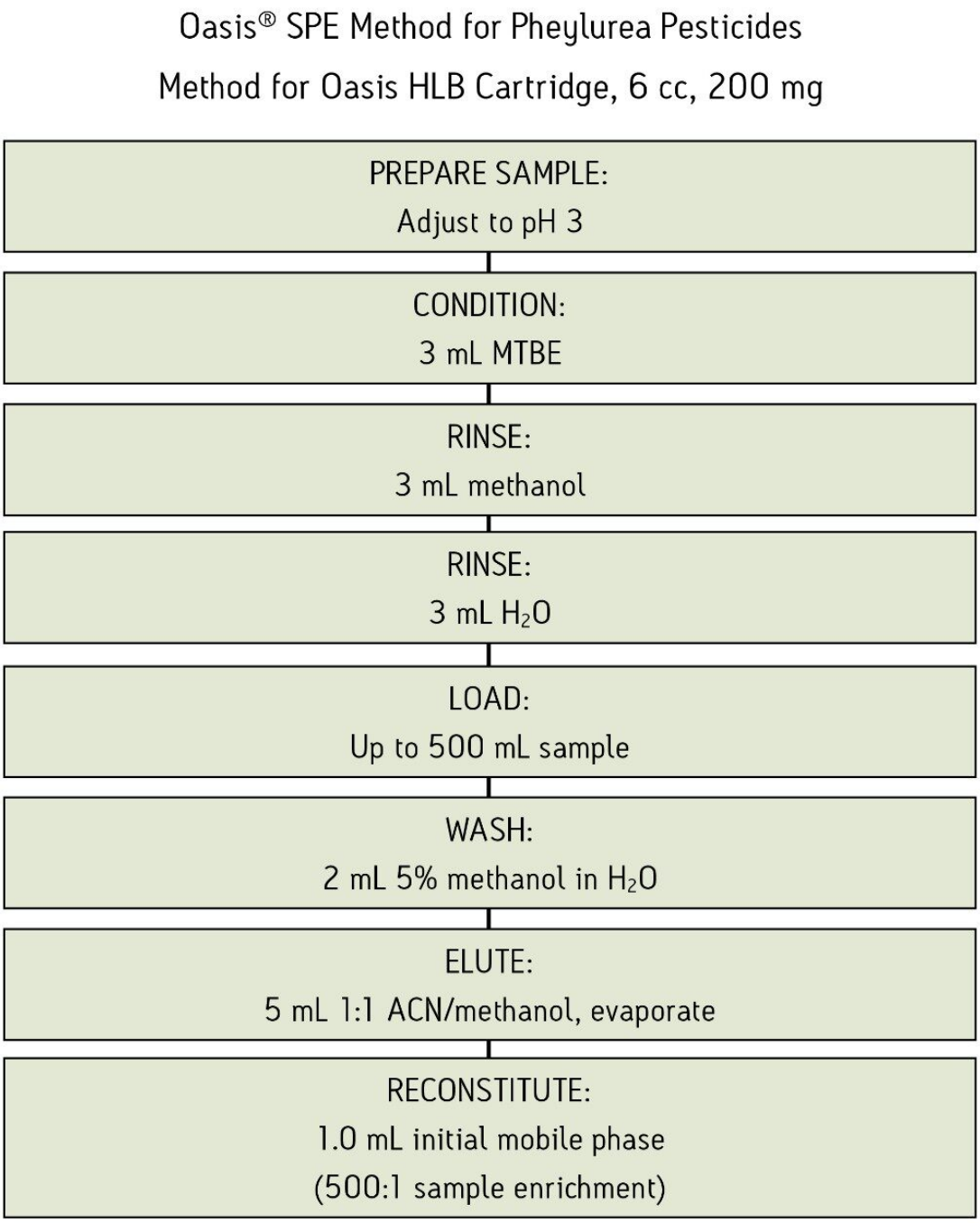
Experimental

HPLC Conditions

Instrument:	Waters Alliance HPLC System with 2996 PDA Detector
Eluent:	A: 25 mM Phosphate, pH 2.4 B: Acetonitrile
Column:	SunFire C_{18}, 3.5 µm 4.6 x 150 mm @ 30 °C
Injection:	20 µL

Flow rate:	1.5 mL/min
Detection:	PDA UV @ 245 nm
Data:	Waters Empower Software

Sample Preparation



Standard Preparation

Pipette 100 µL of AccuStandard mix M-532 and 20 µL mix M-532-SS into 880 µL 1:1 water/acetonitrile (10 ppm analytes plus surrogates).

Eleuent Preparation

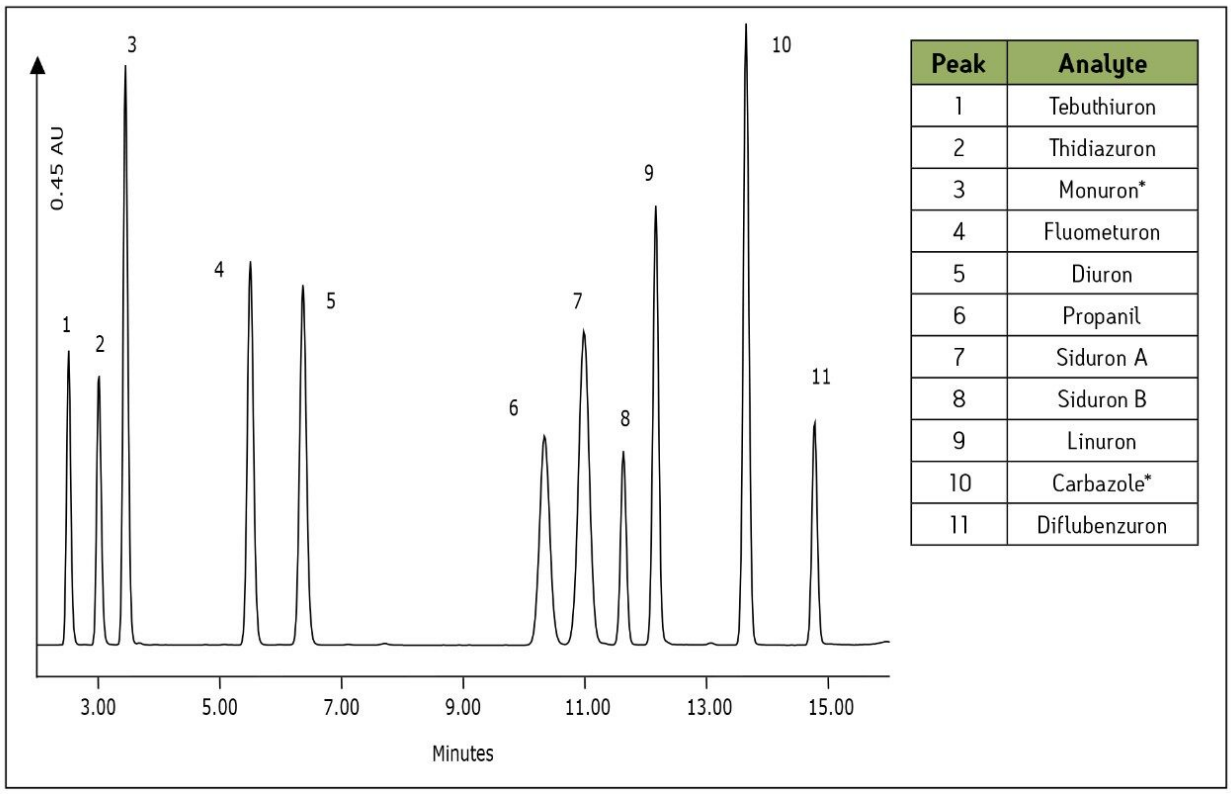
A: 25 mM phosphate

Dissolve 1.7 g of potassium dihydrogen phosphate (KH_2PO_4) and 850 µL phosphoric acid (H_3PO_4) in 100 mL water. Dilute to 1 L, then filter and degas. Verify that the pH is approximately 2.4.

B: Acetonitrile

Time	Flow	%A	%B	Curve
-	1.5	60	40	-
9.5	1.5	60	40	6
10.0	1.5	50	50	6
14.0	1.5	40	60	6
15.0	1.5	60	40	6

Eluent gradient.



Peak	Analyte
1	Tebuthiuron
2	Thidiazuron
3	Monuron*
4	Fluometuron
5	Diuron
6	Propanil
7	Siduron A
8	Siduron B
9	Linuron
10	Carbazole*
11	Diflubenzuron

** Surrogate compounds UV @ 245 nm*

Standard chromatogram, 10 ppm each analyte.

Related Documents

- Multi-Residue Analysis of Priority Pollutants in Drinking and Surface Waters Using Solid-Phase Extraction - 720001438EN <https://www.waters.com/nextgen/us/en/library/application-notes/2007/multi-residue-analysis-of-priority-pollutants-in-drinking-and-surface-water-using-solid-phase-extraction-and-gc-tandem-quadrupole-ms-ms.html>
- Food and Environmental Residue Analysis - 720002274EN < https://www.waters.com/webassets/cms/library/docs/720002274en.pdf>
- Environmental Applications Book - 720002123EN < https://www.waters.com/webassets/cms/library/docs/720002123en.pdf>

Featured Products

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

Empower Chromatography Data System <https://www.waters.com/10190669>

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