Waters™

應用手冊

EPA Method 6850.0 Determination of Perchlorate in Water, Soils and Solid Wastes using High Performance Liquid Chromatography/Electrospray Ionization/Mass Spectrometry (HPLC-ESI/MS)

Waters Corporation

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

Abstract

This application brief demonstrates the determination of perchlorate in water, soils and solid wastes using High Performance Liquid Chromatography/Electrospray Ionization/Mass Spectrometry (HPLC-ESI/MS).

Introduction

Perchlorate is both naturally occurring and man-made. In its natural form, perchlorate is a contaminent in fertilizers. Man-made perchlorate is used in a wide variety of industrial applications including the production of rubber and paint, in lubricants, and as a primary ingredient in solid rocket propellant. Perchlorate is highly water soluble and can migrate into groundwater and surface water, posing a concern to drinking water supplies. Thirty-five states have detected perchlorate in drinking water at higher levels than expected. The United States Environmental Protection Agency (US EPA) has established an official reference dose of 0.0007 ppb per day of perchlorate. Maryland, Massachusetts and New Mexico have established a one part per billion (ppb) action limit, while California and Texas have established 4 ppb limits.

Experimental

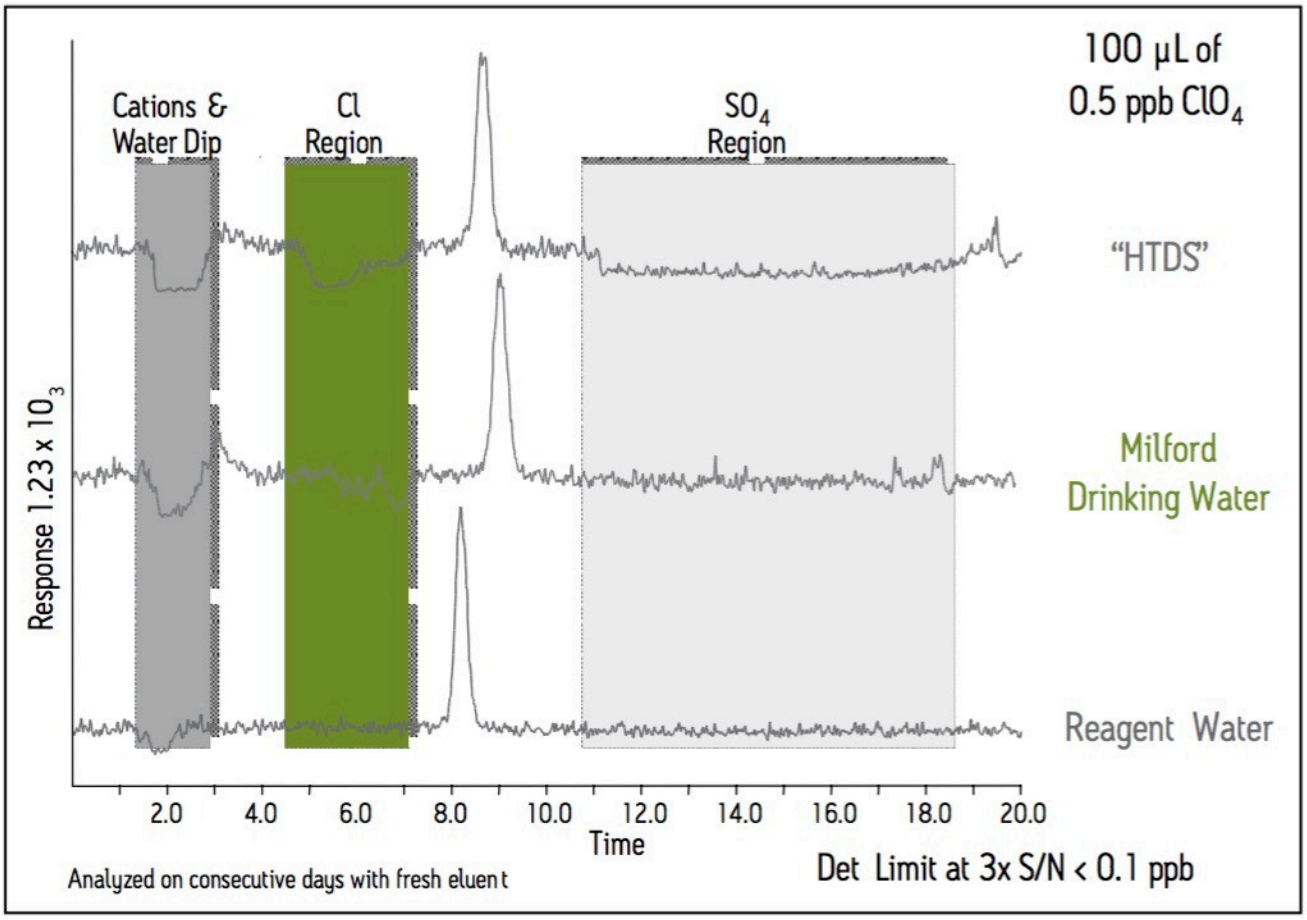
HPLC Conditions

Instrument:	Waters Alliance 2695 System with Conductivity Detector
Column:	IC-Pak Anion HR, 6 µm , 4.6 x 75 mm
Eluent:	25 mM NH_4HCO_3, pH 10 with NH_4OH in 50% ACN
Flow rate:	0.5 mL/min

Column temp:	30 °C
Back pressure:	<1000 psi
Back conditions:	~1600 µS
Injection:	100 µL

MS Conditions

Instrument:	Quattro micro Mass Spectrometer
Ionization:	ESI- LM 1 Resolution: 15
Capillary (V):	.58 HM 1 Resolution: 15
Cone (V):	40 Ion Energy 1: 0.6
Extractor (V):	3 Entrance (V): 1
RF Lens (V):	0.3 Collision Energy: 30
Source temp ˚C:	125 Exit: 1
Desolvation temp:	400 LM 2 Resolution: 14
Cone Gas (L/hr):	50 HM 2 Resolution: 14
Desolvation gas:	500 Ion Energy 2: 1
Gas cell pressure:	2 x 10^{-2} mbar Multiplier: 650



0.5 ppb perchlorate detection in three different sample matrices by LC-MS/MS.

Related Documents	Literature Code
Environmental System Solutions	720001601EN
The Determination of Perchlorate in Water Using LC/MS/MS	720000941EN
The Determination of Perchlorate in Drinking Water Using Single Quadrupole Mass Spectrometry	720001285EN

http://www.waters.com/library

Featured Products

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

720002735, August 2008