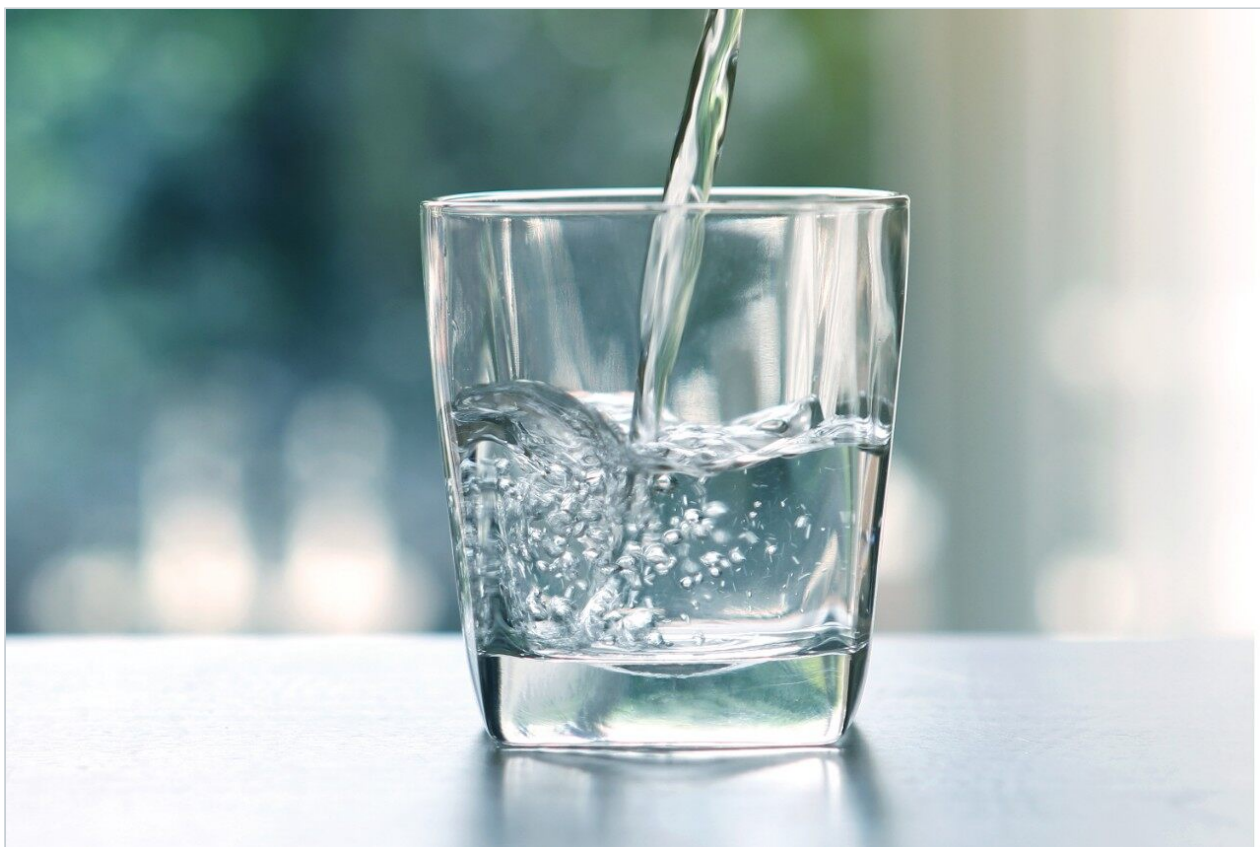


응용 자료

EPA Method 554.0 Determination of Carbonyl Compounds in Drinking Water by Dinirtophenyldydrazine Derivatization and High Performance Liquid Chromatography

Waters Corporation



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

Abstract

Large quantities of carbonyl compounds are used worldwide, primarily in the chemical and plastics industries. Demonstrated to be potentially carcinogenic, these compounds have been found in industrial waste where they can to leach into groundwater supplies.

Introduction

Large quantities of carbonyl compounds are used worldwide, primarily in the chemical and plastics industries. Demonstrated to be potentially carcinogenic, these compounds have been found in industrial waste where they can to leach into groundwater supplies and contaminate drinking water.

Experimental

HPLC conditions

| | |
|-------------|---|
| Instrument: | Waters Alliance HPLC system with UV detection |
| Eluent: | Water/tetrahydrofuran/acetonitrile |
| Column: | Waters XBridge Phenyl, 3.5 μ m, 4.6 x 150 mm @ 35 °C |
| Injection: | 20 μ L each of AccuStandard mix (M- 8315-R1- DNPH and M- 8315-R2- DNPH) diluted 1:5 in 40:60 water/acetonitrile |
| Flow Rate: | 1.5 mL/min |

Detection: UV @ 360 nm

Data: Waters Empower software

Sample preparation

DNPH reagent added to 100 mL sample, extract with Oasis HLB or use methylene chloride extraction option.

Eluent preparation

Filter and degas through a 0.45 µm filter.

A: 90% water, 10% tetrahydrofuran (THF) Mix 900 mL water and 100 mL stabilized THF.

B: Acetonitrile

Eluent gradient for EPA methods 554 and 8315 Option 1.

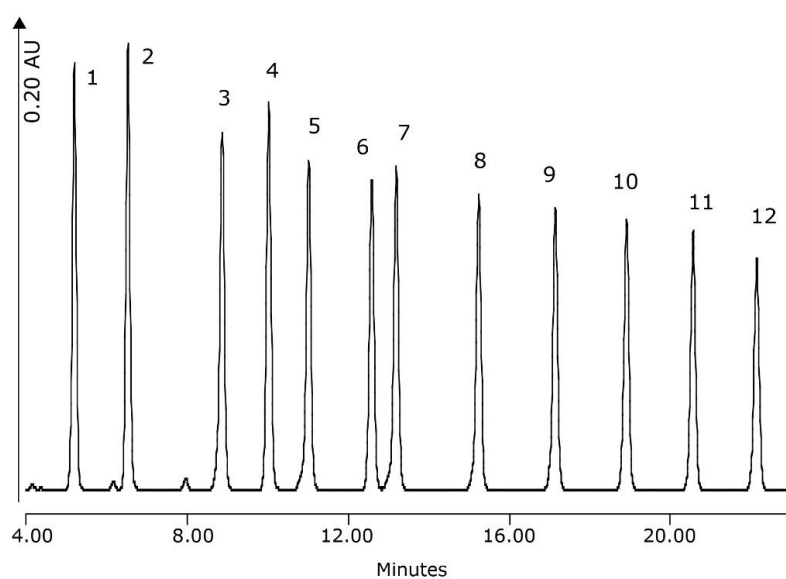
| Time | Flow | %A | %B | Curve |
|---------|------|----|----|-------|
| Initial | 1.5 | 70 | 30 | - |
| 20 | 1.5 | 36 | 64 | 6 |
| 22 | 1.5 | 36 | 64 | 6 |
| 22.1 | 1.5 | 70 | 30 | 6 |

Eluent gradient for EPA methods TO11 and 8315 Option 2

| Time | Flow | %A | %B | Curve |
|---------|------|----|----|-------|
| Initial | 1.5 | 70 | 30 | - |
| 16 | 1.5 | 53 | 47 | 6 |
| 21 | 1.5 | 53 | 47 | 6 |

| Time | Flow | %A | %B | Curve |
|------|------|----|----|-------|
| 21.1 | 1.5 | 70 | 30 | 6 |

Results and Discussion



| Peak | Analyte | Peak | Analyte |
|------|----------------|------|----------|
| 1 | Formaldehyde | 7 | Pentanal |
| 2 | Acetaldehyde | 8 | Hexanal |
| 3 | Propanal | 9 | Heptanal |
| 4 | Crotonaldehyde | 10 | Octanal |
| 5 | Butanal | 11 | Nonanal |
| 6 | Cyclohexanone | 12 | Decanal |

EPA method 554 and 8315-01 analytes, 20 parts per million (ppm) as DNPH analytes.

References

1. Analysis of DNPH Derivatives Using XBridge Phenyl WA60186
2. Fast Analysis of Aldehydes and Ketones using UPLC 720001860EN

Featured Products

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

Empower 3 Chromatography Data Software <<https://www.waters.com/10190669>>

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