



Chlorophenol, nitrophenols and methylphenols

Determination of methyl-, nitro- and chlorophenols in water

Application Note

Environmental

Authors

Agilent Technologies, Inc.

Introduction

Gas chromatography with Agilent CP-Sil 8 CB and CP-5 CB columns separate 33 methyl-, nitro, and chlorophenols in river water in 35 minutes.



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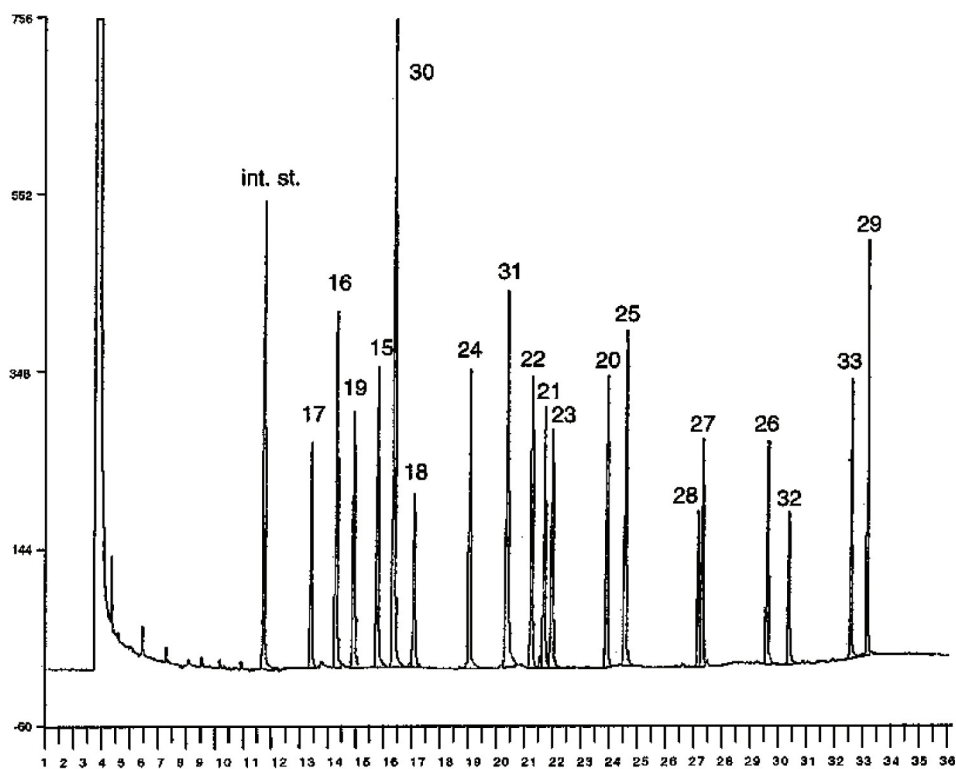
Conditions

Technique : GC-capillary
Column : ECD: Agilent CP-Sil 8 CB, 0.32 mm x 50 m fused silica WCOT CP-Sil 8 CB (0.12 μ m) (Part no. CB7751)
FID: Agilent CP-Sil 5 CB, 0.32 mm x 50 m fused silica WCOT CP-Sil 5 CB (0.12 μ m) (Part no. CP7750)
Temperature : 90 °C \rightarrow 105 °C, 1 °C/min
105 °C \rightarrow 162 °C, 3 °C/min
Carrier Gas : He, 190 kPa (1.9 bar, 28 psi)
Injector : Splitter, 10 mL/min
T = 250 °C
Detector : ECD: make up argon/methane - 90/10
T = 300 °C
FID: make up helium
T = 250 °C
Sample Size : 5 μ L
Concentration range : 0.5 - 10 μ g/mL

Sample with ECD detection on CP-Sil 8 CB column

Peak identification

1. phenol
2. o-cresol
3. m-cresol
4. p-cresol
5. 2,3-dimethylphenol
6. 2,4-dimethylphenol
7. 2,5-dimethylphenol
8. 3,4-dimethylphenol
9. m-ethylphenol
10. p-ethylphenol
11. 4-chloro-3-methylphenol
12. 2-chlorophenol
13. 3-chlorophenol
14. 4-chlorophenol
15. 2,3-dichlorophenol
16. 2,4/2,5-dichlorophenol
17. 2,6-dichlorophenol
18. 3,4-dichlorophenol
19. 3,5-dichlorophenol
20. 2,3,4-trichlorophenol
21. 2,3,5-trichlorophenol
22. 2,3,6-trichlorophenol
23. 2,4,5-trichlorophenol
24. 2,4,6-trichlorophenol
25. 3,4,5-trichlorophenol
26. 2,3,4,5-tetrachlorophenol
27. 2,3,4,6-tetrachlorophenol
28. 2,3,5,6-tetrachlorophenol
29. pentachlorophenol
30. 2-nitrophenol
31. 4-nitrophenol
32. 2,4-dinitrophenol
33. DNOC



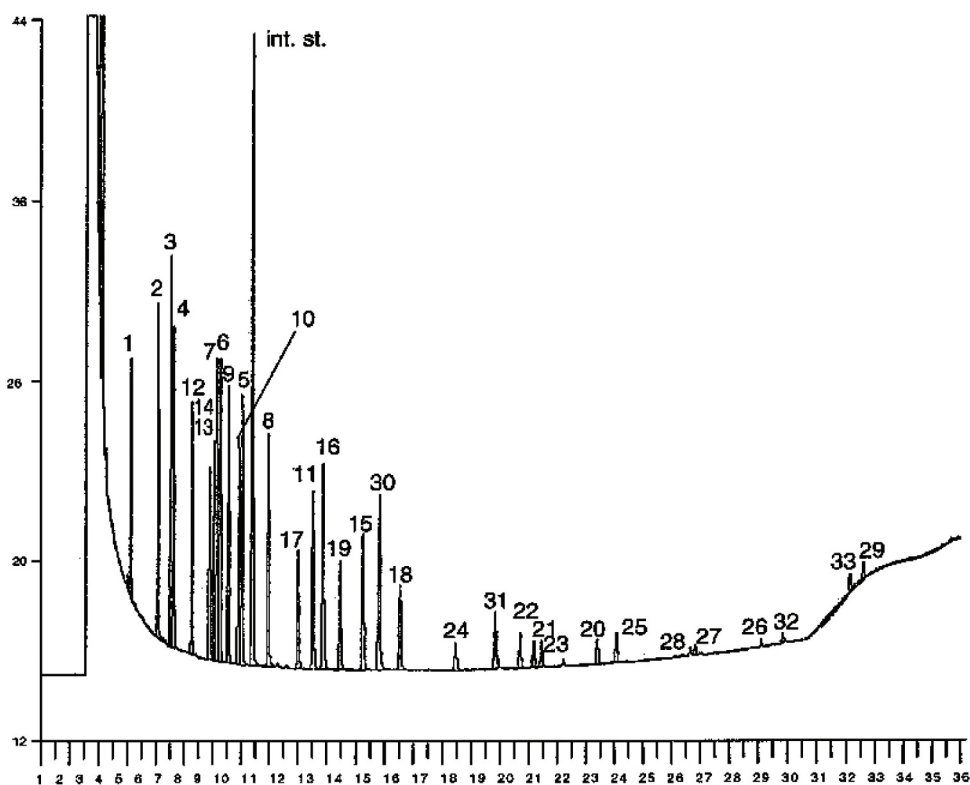
Sample Preparation

200 mL of river water including silt were shaken successively with 40, 40 and 20 mL of toluene for 10 min. The combined toluene extracts were shaken with 3 x 20 ml of 0.1 M solution of potassium carbonate for 3 min. 0.5 mL of acetic anhydride and 5 mL of petroleum ether were added to the combined aqueous phases and thoroughly mixed at room temperature for 5 min. The petroleum phase was decanted and dried with anhydrous sodium sulfate. 5 µL of the petroleum ether phase were injected into the GC.

Peak identification

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3. m-cresol
4. p-cresol
5. 2,3-dimethylphenol
6. 2,4-dimethylphenol
7. 2,5-dimethylphenol
8. 3,4-dimethylphenol
9. m-ethylphenol
10. p-ethylphenol
11. 4-chloro-3-methylphenol
12. 2-chlorophenol
13. 3-chlorophenol
14. 4-chlorophenol
15. 2,3-dichlorophenol
16. 2,4/2,5-dichlorophenol
17. 2,6-dichlorophenol
18. 3,4-dichlorophenol
19. 3,5-dichlorophenol
20. 2,3,4-trichlorophenol
21. 2,3,5-trichlorophenol
22. 2,3,6-trichlorophenol
23. 2,4,5-trichlorophenol
24. 2,4,6-trichlorophenol
25. 3,4,5-trichlorophenol
26. 2,3,4,5-tetrachlorophenol
27. 2,3,4,6-tetrachlorophenol
28. 2,3,5,6-tetrachlorophenol
29. pentachlorophenol
30. 2-nitrophenol
31. 4-nitrophenol
32. 2,4-dinitrophenol
33. DNOC

Sample with FID detection on CP-Sil 5 CB column



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This information is subject to change without notice.

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