

Application Report 387

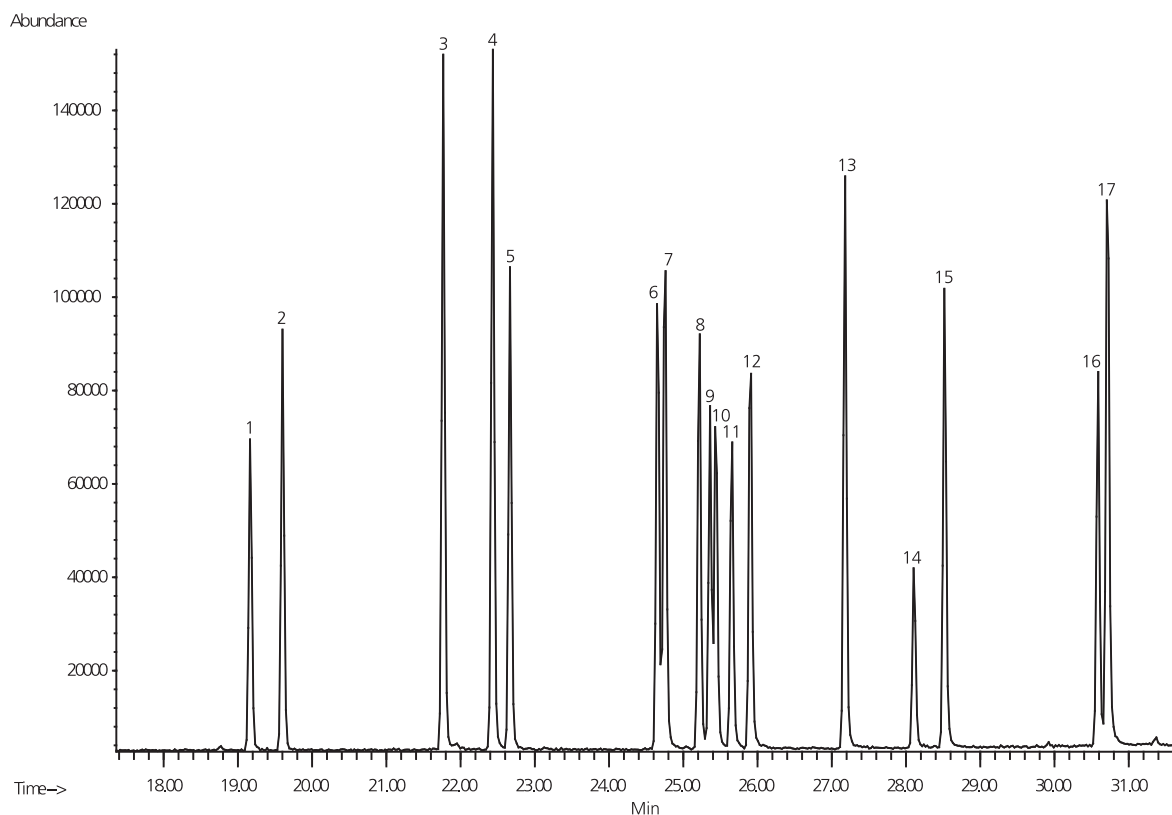
GC-MS Analysis of Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans on the SLB-5ms Column

Polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) consist of 210 different compounds with varying degrees of toxicity, and the 17 congeners with chlorine substitution in the 2,3,7,8 positions are considered the most toxic. This chromatogram illustrates the separation of a 17 component 2,3,7,8-substituted PCDD and PCDF standard on a 30 m x 0.25 mm I.D. x 0.25 µm SLB-5ms column. Note the resolution between 1,2,3,4,7,8-HxCDD and 1,2,3,6,7,8-HxCDD. US EPA Method 8280, which is for the analysis of these compounds by low resolution GC-MS, requires ≥ 50% resolution between these two isomers.

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Acquisition System: 6890/5973 GC-MS
Notebook Reference: 1509-95

Key Words

dioxins, furans, PCDDs, PCDFs, US EPA Method 8280, SLB-5ms, 28471-U



G003529

Conditions

column: SLB-5ms, 30 m x 0.25 mm I.D. x 0.25 µm (28471-U)
oven: 150 °C (1 min.), 5 °C/min. to 325 °C (2 min.)
inj.: 250 °C
MSD interface: 325 °C
scan range: SIM
carrier gas: helium, 37 cm/sec, constant
injection: 1 µL, splitless (1 min.)
liner: 4 mm I.D., single taper
sample: 17 component 2,3,7,8-substituted dioxin standard, 100-500 ppb in n-nonane

Peak IDs

- | | |
|-------------------------------|----------------------------------|
| 1. 2,3,7,8-TCDF, 100 ppb | 10. 1,2,3,6,7,8-HxCDD, 500 ppb |
| 2. 2,3,7,8-TCDD, 100 ppb | 11. 1,2,3,7,8,9-HxCDD, 250 ppb |
| 3. 1,2,3,7,8-PCDF, 250 ppb | 12. 1,2,3,7,8,9-HxCDF, 250 ppb |
| 4. 2,3,4,7,8-PCDF, 250 ppb | 13. 1,2,3,4,6,7,8-HpCDF, 250 ppb |
| 5. 1,2,3,7,8-PCDD, 250 ppb | 14. 1,2,3,4,6,7,8-HpCDD, 250 ppb |
| 6. 1,2,3,4,7,8-HxCDF, 500 ppb | 15. 1,2,3,4,7,8,9-HpCDF, 250 ppb |
| 7. 1,2,3,6,7,8-HxCDF, 500 ppb | 16. OCDD, 500 ppb |
| 8. 2,3,4,6,7,8-HxCDF, 250 ppb | 17. OCDF, 500 ppb |
| 9. 1,2,3,4,7,8-HxCDD, 500 ppb | |