

# CDSolutions

APPLICATIONS INFORMATION USING ADVANCED SAMPLE HANDLING TECHNOLOGY

## EPA Method 524 Using the CDS 7000 Purge & Trap

The analysis of water for volatile organic contaminants using purge and trap techniques has been an established method for decades. Trace level organic compounds are purged from the water using a stream of inert gas, trapped using a multi-bed sorbent trap, and then transferred to the gas chromatograph for identification. The resulting chromatogram contains compounds ranging from gases like vinyl chloride to naphthalene and trichlorobenzene.

Figure 1 shows a purge and trap analysis of EPA method 524 volatiles at the 20 PPB level using the CDS Model 7000. The water was purged for 11 minutes with helium at a flow rate

of 40 ml/minute. Water vapor was removed from the carrier upstream of the trap using the Water Elimination Trap, and the trap desorption step used the desorb-preheat function. After desorption, the trap was baked to vent at 260°C for ten minutes to prepare it for the next sample.

For this analysis, the 7000 was interfaced to GC/MS using a heated transfer line, and operated with a split at the injection port. The entire chromatogram is completed in less than 20 minutes, and shows excellent resolution of the gases, (the first six peaks). A complete list of the peak identifications is shown in Table 1.

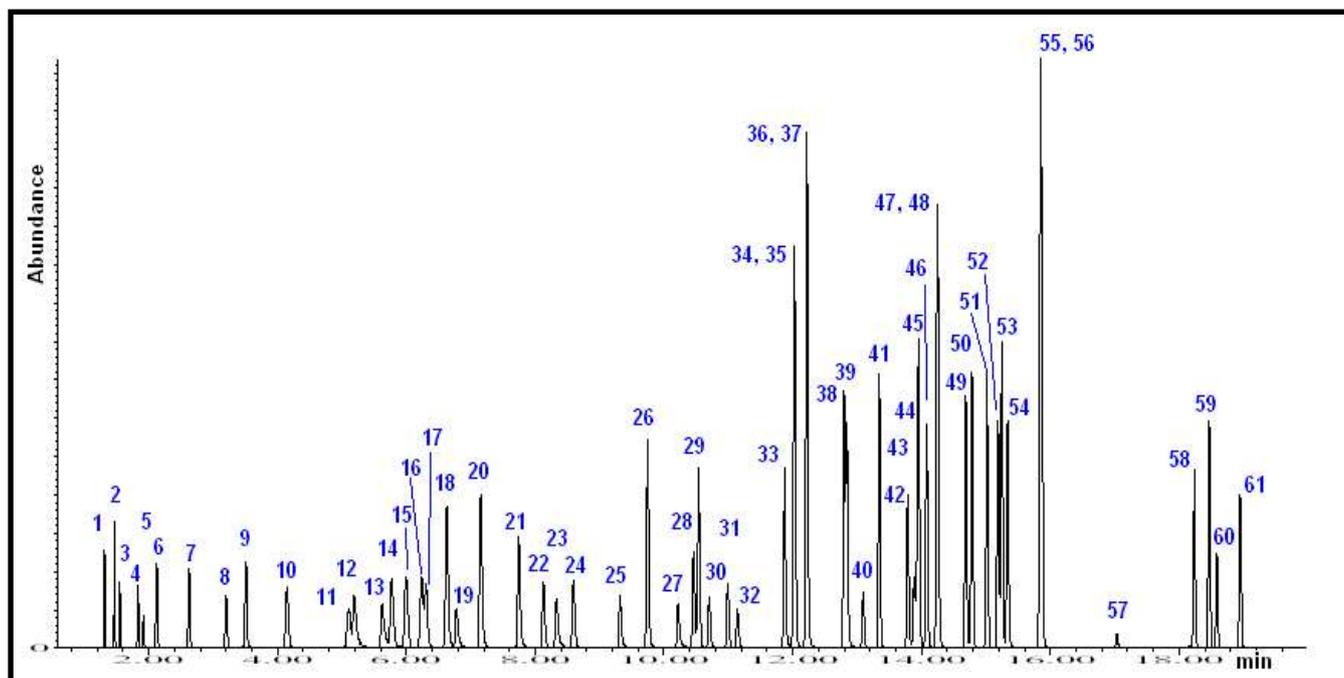


Figure 1. Volatiles at 20 PPB concentration purged from water.

## Equipment:

### GC/MS

GC/MS: Agilent 6890 with 5975B  
Column: Varian CP 624 CB  
30 m, 0.25mm, 1.4 um  
Flow Rate: 1.3 ml/min  
Split ratio: 40:1  
Program: 40°C for 5 minutes  
Ramp: 10°C/minute  
Final: 180°C

### CDS 7000

Purge Volume: 10 ml  
Purge time: 11 minutes  
Purge Flow: 40 ml/minute  
Desorb pre-heat: 245°C  
Desorb: 250°C for 2 minutes  
Trap Bake: 260°C for 10 minutes  
Valve oven: 130°C  
Transfer Lines: 130°C  
Wet Trap Ready: 50°C  
Wet Trap Bake: 260°C

## Table 1. Peak Identification

1. Dichlorodifluoromethane	32. 1,2-Dibromoethane
2. Chloromethane	33. Chlorobenzene
3. Vinyl chloride	34. 1,1,1,2-Tetrachloroethane
4. Bromomethane	35. Ethylbenzene
5. Chloroethane	36. m-Xylene
6. Trichlorofluoromethane	37. p-Xylene
7. 1,1-Dichloroethylene	38. o-Xylene
8. Methylene chloride	39. Styrene
9. trans-1,2-Dichloroethene	40. Tribromomethane
10. 1,1-Dichloroethane	41. Isopropyl benzene
11. 2,2-Dichloropropane	42. Bromobenzene
12. cis-1,2-Dichloroethene	43. 1,1,2,2-Tetrachloroethane
13. Bromochloromethane	44. 1,2,3-Trichloropropane
14. Chloroform	45. n-Propyl benzene
15. 1,1,1-Trichloroethane	46. 2-chlorotoluene
16. Carbon tetrachloride	47. 1,3,5-Trimethyl benzene
17. 1,2-Dichloropropene	48. 4-Chlorotoluene
18. Benzene	49. tert-Butyl benzene
19. 1,2-Dichloroethane	50. 1,2,4-Trimethyl benzene
20. Fluorobenzene (I.S.)	51. sec-Butyl benzene
21. Trichloroethylene	52. 1,3-Dichlorobenzene
22. 1,2-Dichloropropane	53. p-Isopropyl toluene
23. Dibromomethane	54. 1,4-Dichlorobenzene
24. Bromodichloromethane	55. 1,4-Dichlorobenzene, d-4
25. cis-1,3-Dichloropropene	56. 1,2-Dichlorobenzene
26. Toluene	57. 1,2-Dibromo-3-chloropropane
27. trans-1,3-Dichloropropene	58. 1,3,5-Trichlorobenzene
28. 1,1,2-Trichloroethane	59. Hexachlorobutadiene
29. Tetrachloroethylene	60. Naphthalene
30. 1,3-Dichloropropane	61. 1,2,3-Trichlorobenzene
31. Dibromochloromethane	

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