CDS olutions

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 tranfer 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.

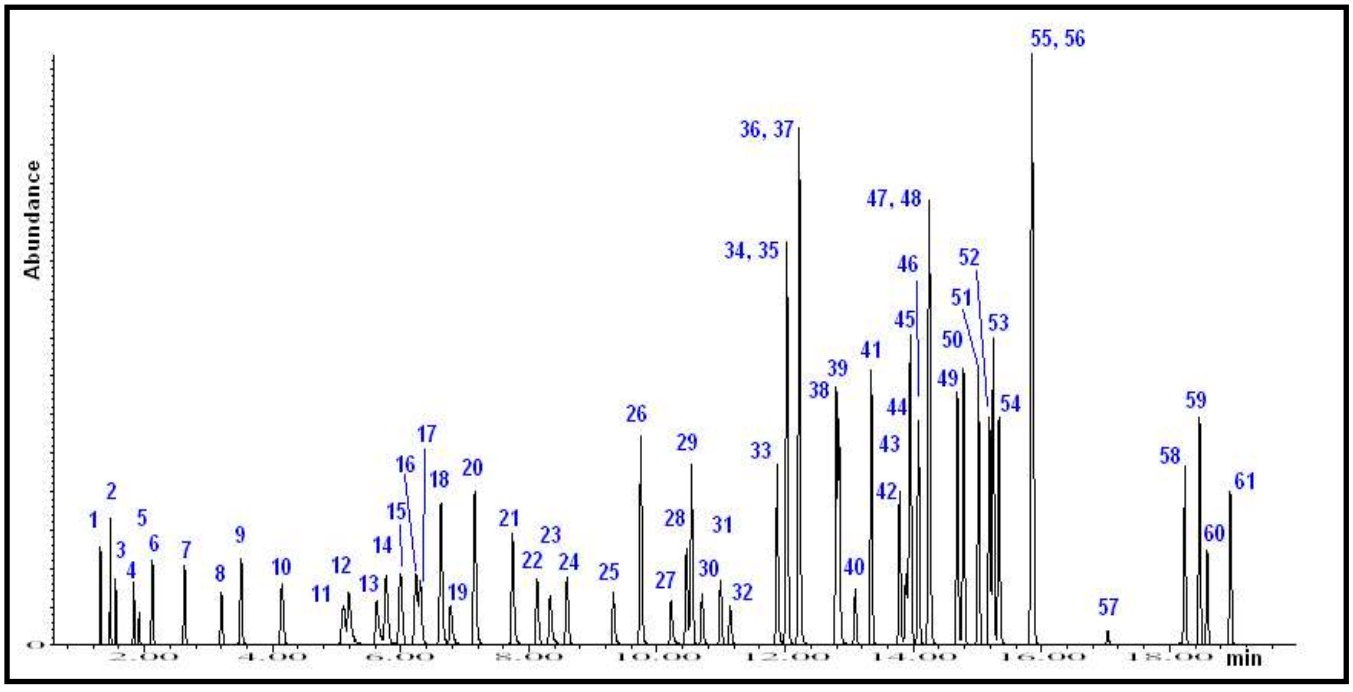

Figure 1. Volatiles at 20 PPB concentration purged from water.

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
2. Chloromethane
3. Vinyl chloride
4. Bromomethane
5. Chloroethane
6. Trichlorofluoromethane
7. 1,1-Dichloroethylene
8. Methylene chloride
9. trans-1,2-Dichloroethene
10. 1,1-Dichloroethane
11. 2,2-Dichloropropane
12. cis-1,2-Dichloroethene
13. Bromochloromethane
14. Chloroform
15. 1,1,1-Trichloroethane
16. Carbon tetrachloride
17. 1,2-Dichloropropene
18. Benzene
19. 1,2-Dichloroethane
20. Flurorbenzene (I.S.)
21. Trichloroethylene
22. 1,2-Dichloropropane
23. Dibromomethane
24. Bromodichloromethane
25. cis-1,3-Dichloropropene
26. Toluene
27. trans-1,3-Dichloropropene
28. 1,1,2-Trichloroethane
29. Tetrachloroethylene
30. 1,3-Dichloropropane
31. Dibromochloromethane
32. 1,2-Dibromoethane
33. Chlorobenzene
34. 1,1,1,2-Tetrachloroethane
35. Ethylbenzene
36. m-Xylene
37. p-Xylene
38. o-Xylene
39. Styrene
40. Tribromomethane
41. Isopropyl benzene
42. Bromobenzene
43. 1,1,2,2-Tetrachloroethane
44. 1,2,3-Trichloropropane
45. n-Propyl benzene
46. 2-chlorotoluene
47. 1,3,5-Trimethyl benzene
48. 4-Chlorotoluene
49. tert-Butyl benzene
50. 1,2,4-Trimethyl benzene
51. sec-Butyl benzene
52. 1,3-Dichlorobenzene
53. p-Isopropyl toluene
54. 1,4-Dichlorobenzene
55. 1,4-Dichlorobenzene, d-4
56. 1,2-Dichlorobenzene
57. 1,2-Dibromo-3-chloroporpane
58. 1.3.5-Trichlorobenzene
59. Hexachlorobutadiene
60. Naphthalene
61. 1,2,3-Trichlorobenzene

CDS Analytical, Inc. 465 Limestone Road, P.O. Box 277, Oxford, PA USA 19363-0277 PH: 610 932 3636 FX: 610 932 4158