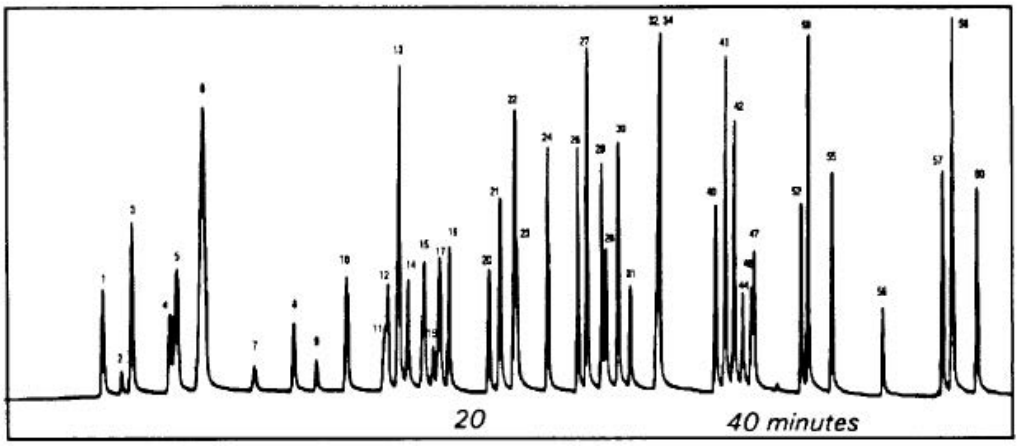
#033

EPA 502.2 Analysis using the EA-600

Figure 1. ELCD Detector



EPA 502.2 is one of a series of methods used to detect pollutants in drinking water. It is specific for 60 volatile organic compounds using purge and trap capillary gas chromatography. The method calls for the use of both a photoionization detector (PID) and an electrolytic conductivity detector (ELCO) in the halogen mode. It is one of the most difficult environmental analyses because of the large number of analytes and the necessity of trapping dissolved gases. Because the retention times of the peaks are very close, it is essential to obtain good peak shape with no tailing. The analytical column, trap material, purge vessel geometry, detector configuration, and water management system all contribute to peak shape.

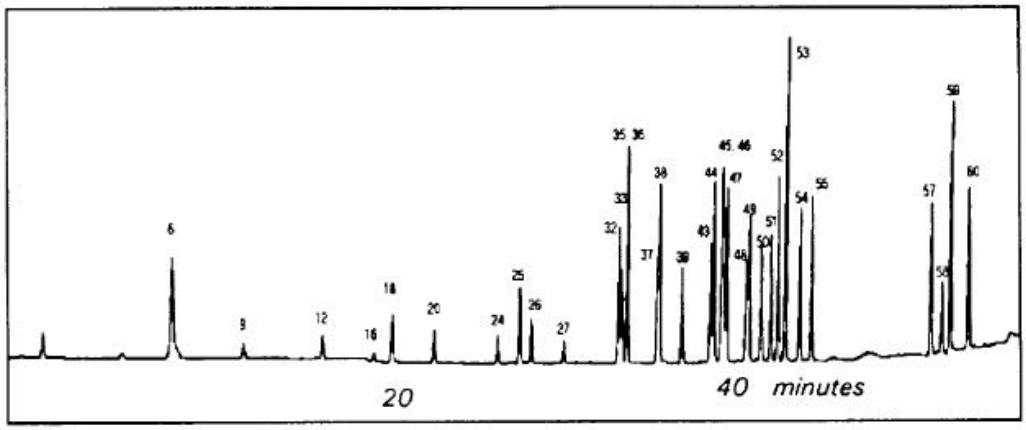


Figure 2. PID Detector

502.2 Peak List

1. dichlorodifluoromethane
2. chloromethane
3. vinyl chloride
4. bromomethane
5. chloroethane
6. trichlorofluoromethane
7. 1,1-dichloroethene
8. methylene chloride
9. trans-1,2-dichloroethene
10. 1,1-dichloroethane
11. 2,2-dichloropropane
12. cis-1,2-dichloroethene
13. chloroform
14. bromochloromethane
15. 1,1,1-trichloroethane
16. 1,1-dichloropropene
17. carbon tetrachloride
18. benzene
19. 1,2-dichloroethane
20. trichloroethene
21. 1,2-dichloropropane
22. bromodichloromethane
23. dibromomethane
24. cis-1 ,3-dichloropropene
25. toluene
26. trans-1 ,3-dichloropropene
27. 1,1,2-trichloroethane
28. 1,3-dichloropropane
29. tetrechloroethene
30. dibromochloromethane
31. 1,2-dibromomethane
32. chlorobenzene
33. ethyl benzene
34. 1,1,1,2-tetrachloroethane
35. m-xylene
36. p-xylene
37. a-xylene
38. styrene
39. isopropyl benzene
40. bromoform
41. l,1,2,2-tetrachloroethene
42. 1,2,3-trichloropropane
43. n-propyl benzene
44. bromobenzene
45. 1,3,5-trimethylbenzene
46. 2-chlorotoluene
47. 4-chlorotoluene
48. tert-butlybenzene
49. 1,2,4-trimethylbenzene
50. sec-butylbenzene
51. p-isopropyltoluene
52. 1,3-dichlorobenzene
53. 1,4-dichlorobenzene
54. n-butylbenzene
55. 1,2-dichlorobenzene
56. 1,2-dibromo-3-chloropropane
57. 1,2,4-trichlorobenzene
58. hexechlorobutadiene
60. 1,2,3-trichlorobenzene
59. naphthalene

The chromatographs shown were obtained using a *CDS Environmental Analyzer,* or *EA-600,* equipped with a *Tremetrics PID* and a *HALL ELCO* in series. The EA-600 consists of a purge and trap unit interfaced to a versatile GC module. The analytes are well separated and display good peak shape in an acceptable analysis time.

Analytical Conditions

Trap:	Tenax-Silica Gel-Charcoal
Purge:	11 minutes
Flow:	38 cc/min HE
Trap temp.:	35 C
Desorb:	280 C, 2 min
Bake:	220 C, 4 min
GC Column:	105 m, 0.53m RTX Volatiles
GC Program:	25 C, hold 10 min 4 C/min to 210 C hold 5 min
Sample:	20 ppb in 5 ml water

FOR MORE INFORMATION CONCERNING THIS APPLICATION, WE RECOMMEND THE FOLLOWING READING:

Air and Water Pollution: A Guide to Federal Regulations. J.J. Keller & Associates, Inc.

Sources of error in purge and trap analysis of volatile organic compounds. J.W. Washall, T.P. Wampler, American Lab, 22, 18, (1990) 38-44.

CDSolutions: *Reproducibility in Automated Environmental Purge and Trap.* J.W. Washall.

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