

EPA 601/602 Analysis using the EA-600

EPA methods 601 and 602 are purge and trap/GC methods used to detect organic pollutants in municipal and industrial waste water. 601 (Figure 1) detects 29 halocarbons using an electroconductivity detector (ELCO). Included in the analytes for method 601 are four of the seven aromatic compounds specified for analysis using a photoionization detector (PIO) in method 602 (Figure 2). Since the sources and analytical conditions are the same, these two methods are frequently combined into one analysis.

The *CDS Analytical EA-600* equipped with a *Tremetrics PIO* and a *HALL ELCO* in series was used to obtain the chromatograms shown. A 5 ml sample of water was spiked with 20 ppb of each of the analytes, purged with helium for 11 minutes and collected onto a trap. The trap was then backflushed at 280 C to provide rapid transfer onto the GC Column.

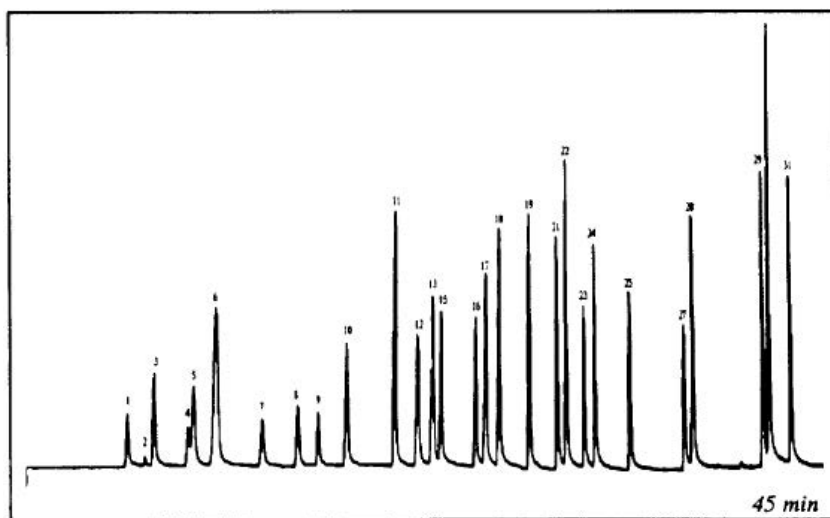


Figure 1. EPA 601 HALL ELCD

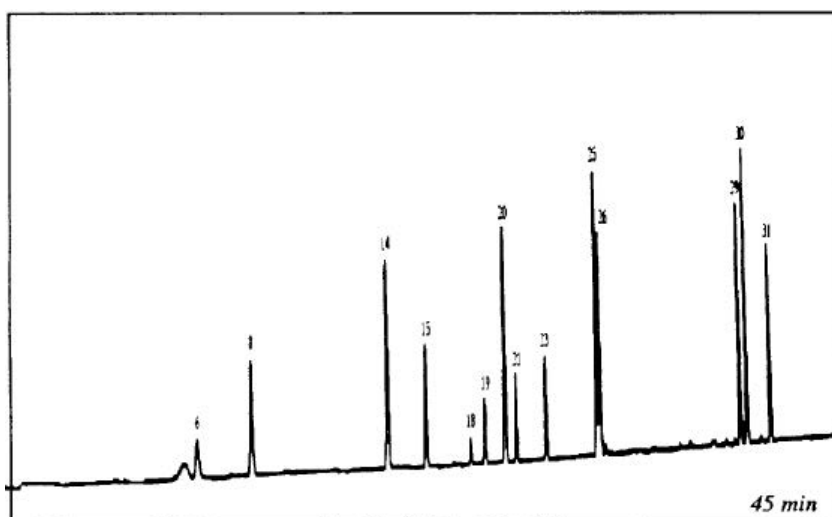


Figure 2. EPA 602 PID

601 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. chloroform
 12. 1,1,1-trichloroethane
 13. carbon tetrachloride
 14. 1,2-dichloroethane
 15. benzene*
 16. trichloroethene
 17. 1,2-dichloropropane
 18. bromodichloromethane
 19. 2-chloroethylvinyl ether
 20. cis-1,3-dichloropropene
 21. toluene*
 22. trans-1,3-dichloropropene
 23. 1,1,2-trichloroethane
 24. tetrachloroethene
 25. dibromochloromethane
 26. chlorobenzene**
 27. ethyl benzene*
 28. bromoform
 29. 1,1,1,2-tetrachloroethane
 30. 1,3-dichlorobenzene**
 31. 1,4-dichlorobenzene**
 32. 1,2-dichlorobenzene**
- *602 only **601 and 602

Analytical Conditions

Trap: Tenax-Silica Gel-Charcoal
Purge: 11 minutes
Flow: 38 cc/min HE
Trap temperature: 35 C
Desorb: 280 C, 2 min
Bake: 220 C, 4 min
GC Column: 105 m, 0.53mm ID
RTX Volatiles
GC Program: 25 C, hold 10 min
4 C/min to 200 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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