



4.6 Headspace Analysis of VOCs in Wastewater - GCMS

■Explanation

The Wastewater Standard was introduced in 1994 in Japan. The standard includes 11 items for VOCs to be measured using the purge & trap method, the headspace method and the solvent extraction method.

The headspace method is particularly effective for measuring effluent VOCs because it is an easy method, with good reproducibility, minimal carryover and it is suitable for continuous measuring if an autosampler is used. Introduced here is analysis of a sample containing all 23 components regulated by the Water Works Law (all items of the Effluent Standard are included in this law).

Instrument : GCMS-QP5000 HS-40
Column : DB-624 0.32mm × 60m df 1.8 μm
Col.Temp. : 40 °C (1min)-200 °C (10 °C/min)
I/F Temp. : 230 °C
Carrier Gas : 100kPa
Sample Temp. : 60 °C
Condition Time : 30 min

References

Application News No. M170

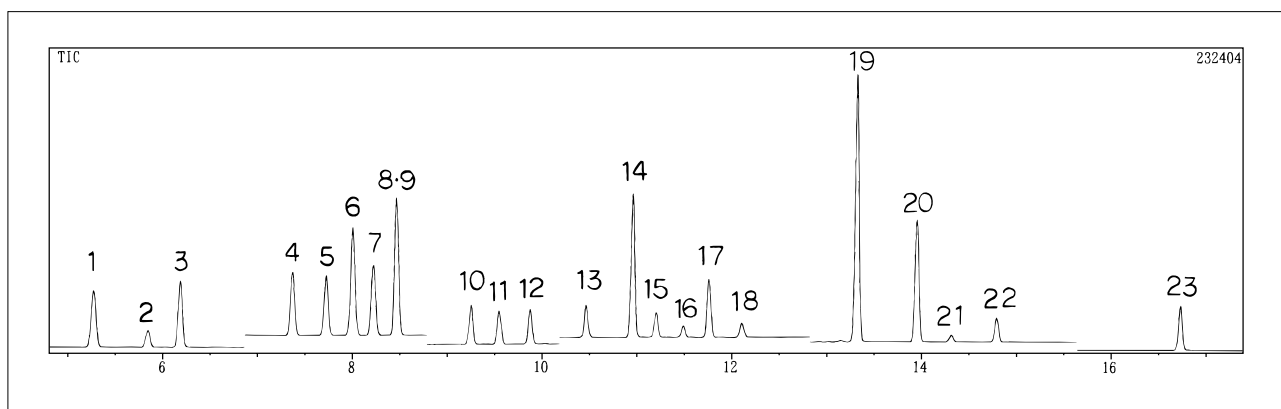


Fig. 4.6.1 TIC of 20ppb standard samples

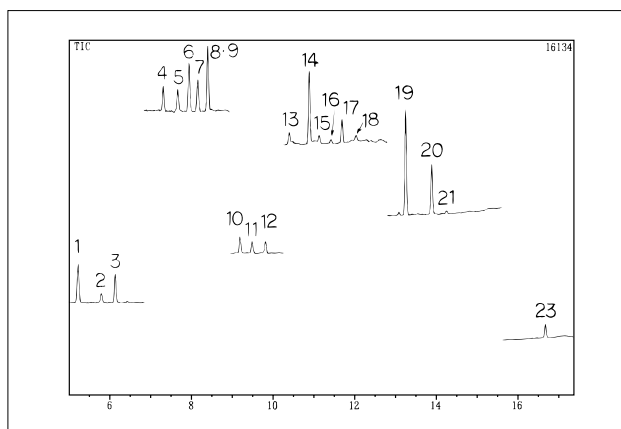


Fig. 4.6.2 SIM of 2ppb standard sample

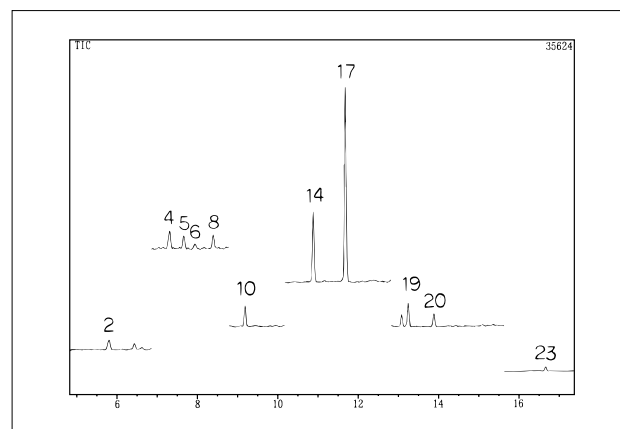


Fig. 4.6.3 Analysis example of wastewater

- 1,1-Dichloroethylene (0.2mg/L)
 - Dichloromethane (0.2mg/L)
 - Trans-1,2-dichloroethylene
 - Cis-1,2-dichloroethylene (0.4mg/L)
 - Chloroform
 - 1,1,1-Trichloroethane (0.3mg/L)
 - Carbon tetrachloride (0.02mg/L)
 - Benzene (0.1mg/L)
 - 1,2-Dichloroethane (0.04mg/L)
 10. Trichloroethylene (0.3mg/L)
 - 1,2-Dichloropropane
 12. Bromodichloromethane
 13. Cis-1,3-dichloropropane (0.02mg/L)
 14. Toluene
 15. Trans-1,3-dichloropropane
 16. 1,1,2-Trichloroethylene (0.06mg/L)
 17. Tetrachloroethylene (0.1mg/L)
 18. Dibromochloromethane
 19. m,p-Xylene
 20. o-Xylene
 21. Bromoform
 22. 1-Bromo-4-fluorobenzene (IS)
 23. 1,4-Dichlorobenzene
- Values given in parenthesis () are reference values in items of Wastewater standard.