

## Reproducibility in Automated Environmental Purge & Trap

Purge and trap is the most frequently used technique for the determination of volatile organic compounds in water samples. For environmental applications, this technique is highly sensitive; offering detection down to part per trillion levels. As with any analytical technique, long term stability of the system is a must. Systems which involve autosampling need to be able to provide consistent results. The U S Environmental Protection Agency, (EPA), in most cases requires the precision of purge and trap/GC analysis to be less than 10%. Figure 1 shows an example of volatile organic compounds analyzed according to EPA method 502.2 using the PeakMaster.

The Auto-Peakmaster EV offers excellent precision and repeatability. The system is composed of a 30 position vial autosampler for water and soil samples and the Peakmaster purge and trap. Water samples are transferred to the Peakmaster for purging, while soil samples are purged in the autosampler.

A standard solution containing 40 ppb each of various aromatics in water was placed in 7 consecutive vials.

Figure 1

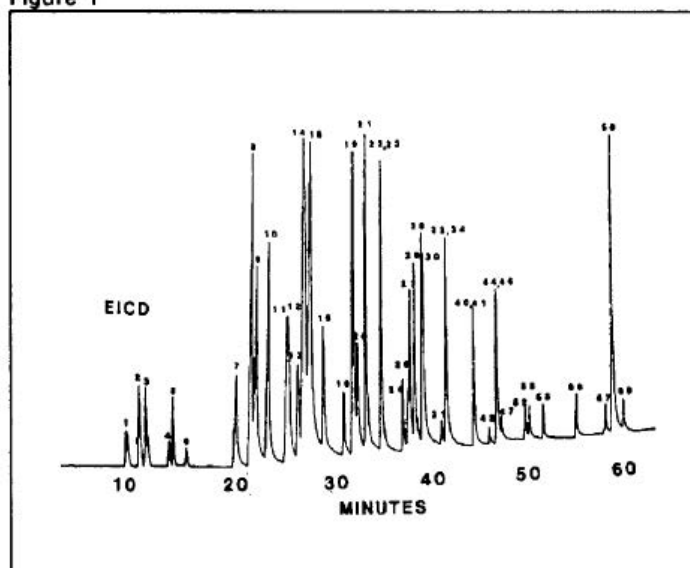


Figure 2

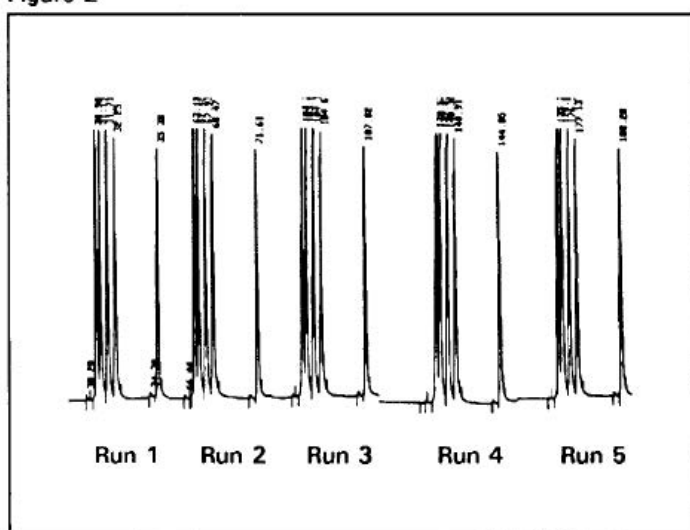


Figure 2 shows five consecutive runs of the 5 part aromatic solution. The peak areas for the 5 compounds were averaged and the percent relative standard deviations calculated. Over the course of the seven consecutive runs, the % RSD for these compounds was 2 % or less.

TABLE		
	COMPOUND	%RSD
1.	Benzene	1.5
2.	Toluene	1.7
3.	o-Xylene	2.0
4.	Chlorobenzene	1.9
5.	o-Dichlorobenzene	2.1

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

*Purge and trap analysis of aqueous samples with cryofocusing*, J. W. Washall and T. P. Wampler, American Lab, 20, 7, (1988) 70-75

*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

*Systems approach to automated cryofocusing in purge and trap, headspace and pyrolytic analysis*, T. P. Wampler, W. Bowe, J. Higgins, American Lab, 17, 8 (1985) 82-87

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#### Headquarters

JSB International  
Tramstraat 15  
5611 CM Eindhoven  
T +31 (0) 40 251 47 53  
F +31 (0) 40 251 47 58

Zoex Europe  
Tramstraat 15  
5611 CM Eindhoven  
T +31 (0) 40 257 39 72  
F +31 (0) 40 251 47 58

#### Sales and Service

Netherlands  
Apolloweg 2B  
8239 DA Lelystad  
T +31 (0) 320 87 00 18  
F +31 (0) 320 87 00 19

Belgium  
Grensstraat 7  
Box 3 1831 Diegem  
T +32 (0) 2 721 92 11  
F +32 (0) 2 720 76 22

Germany  
Max-Planck-Strasse 4  
D-47475 Kamp-Lintfort  
T +49 (0) 28 42 9280 799  
F +49 (0) 28 42 9732 638

UK & Ireland  
Cedar Court,  
Grove Park Business Est.  
White Waltham, Maidenhead  
Berks, SL6 3LW  
T +44 (0) 16 288 220 48  
F +44 (0) 70 394 006 78

[info@go-jsb.com](mailto:info@go-jsb.com)  
[www.go-jsb.com](http://www.go-jsb.com)

