

Technical Evaluation of a Dedicated Environmental Analyzer

The focus of this work is to detail and evaluate a dedicated system for purge and trap/GC analysis of environmental samples. The EA-600 Environmental Analyzer consists of a purge and trap system interfaced to a versatile GC module. The purge and trap system features the ability to analyze water, soil and air samples. The unit also has EPA purge and trap methods pre-programmed into its memory for easy operation. A total of 9 methods can be programmed and stored. A Wetrap is installed prior to the adsorbent trap, which removes 85-95% of all water vapor even at 85° C. The GC module is compact but is able to accommodate 8" capillary column cages. Temperatures up to 400°C are possible with 5 programmable ramps.

A good analytical system should give a linear response and be reproducible. The EA-600 was evaluated to determine both of these criteria. Linearity was tested using samples containing various volatile organic compounds at concentrations ranging from 20 ppb to 400 ppb in water.

The samples were purged for 10 minutes at ambient temperature and the trap was backflushed at 200° C for 5 minutes. Figure 1 shows a plot of detector response versus concen-

Figure 1

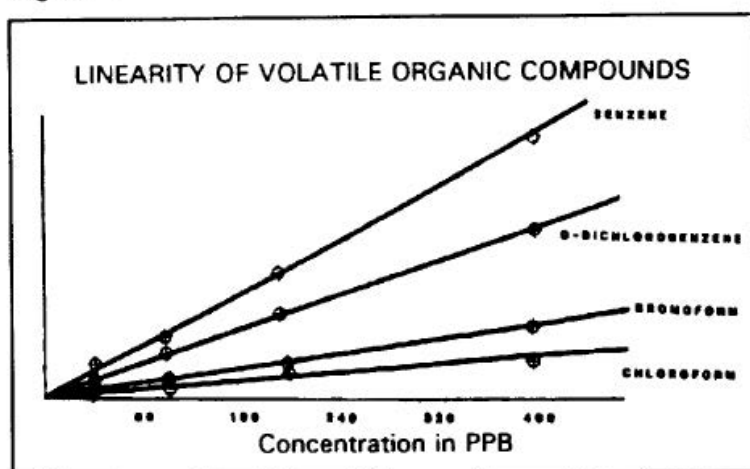
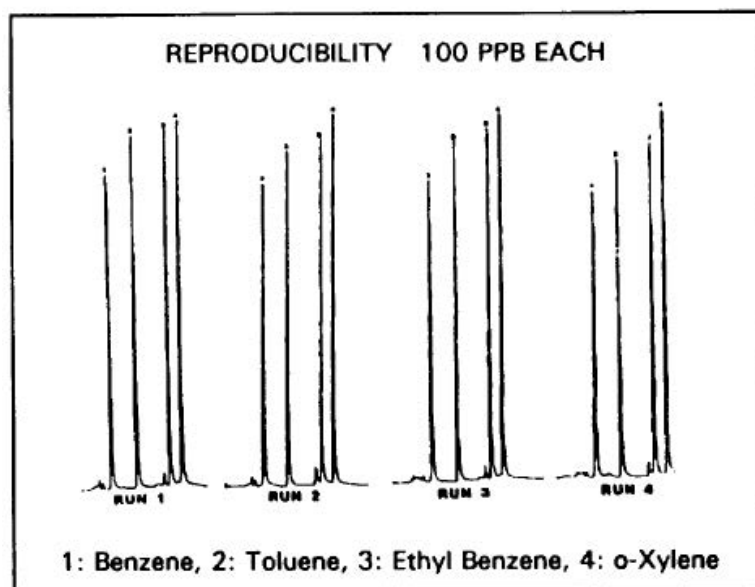


Figure 2



tration for benzene, o-dichlorobenzene, chloroform and bromoform. Over a very wide concentration range, the EA-600 shows good linearity.

After determining linearity, the next step was to examine the reproducibility of the system. A sample containing 100 ppb each of benzene, toluene, ethyl benzene and o-xylene (BTEX) was analyzed 8 consecutive times. Figure 2 shows four consecutive runs of this sample. From the 8 runs, an average peak height was obtained and the percent relative standard deviation calculated. These results are summarized below.

Compound	%RSD
Benzene	5.5%
Toluene	3.8%
Ethylbenzene	1.4%

The CDS Analytical EA-600 dedicated purge and trap system performed with a high degree of linearity and repeatability in this study. With the capability of analyzing water, soil and air monitoring cartridges, the EA-600 offers flexibility as well as quality.

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

J. W. Washall and T. P. Wampler,
"Purge and trap analysis of aqueous
samples with cryofocusing", American
Laboratory, July 1988.

J. W. Washall and T. P. Wampler,
"Sources of error in purge and trap
analysis of volatile organic com-
pounds", American Laboratory, De-
cember, 1990, P. 38.

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