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Gas Chromatography

Applications for Process and Laboratory

Monitoring of BTX in Water at the low ppb-Level

Water is used in various processes for contact or non-contact cooling medium, as solvent or clean up medium, as clean water in food processing facilities or, as in this example, as ballast for empty crude oil super tanker.

Due to the presence of oil residue in the tanks, the salt water is contaminated and has to be cleaned up before being discharged back into the environment. The clean up process has to be continuously monitored to ensure mandated levels of concentrations that in this case are at the low ppb range.

When utilizing an on line Process GC system, these low concentration levels can not be detected in a reliable manner without using some kind of sensitivity enhancement. The most elegant procedure is using a liquid/gas extraction in the form of a continuous on line sparging method where volatile constituents are transferred from the liquid into the gas phase. Using this type of extraction method not only eliminates the troublesome presence of salt in water, but it also provides a relative enrichment of the volatile constituents in the gas phase compared to their concentration in the liquid phase.

The following example is utilizing a sparging system, a "valveless" capillary column separation system and a FID to monitor on line and automatically BTX in salt water.

Analytical System:

GC: PGC x02, MAXUM

Injection:
Vapor

Columns:
Capillary Columns

Column Switching:
Valveless "LIVE" Column Switching

Detector:
Flame Ionization Detector

Specialty:
ppb sensitivity

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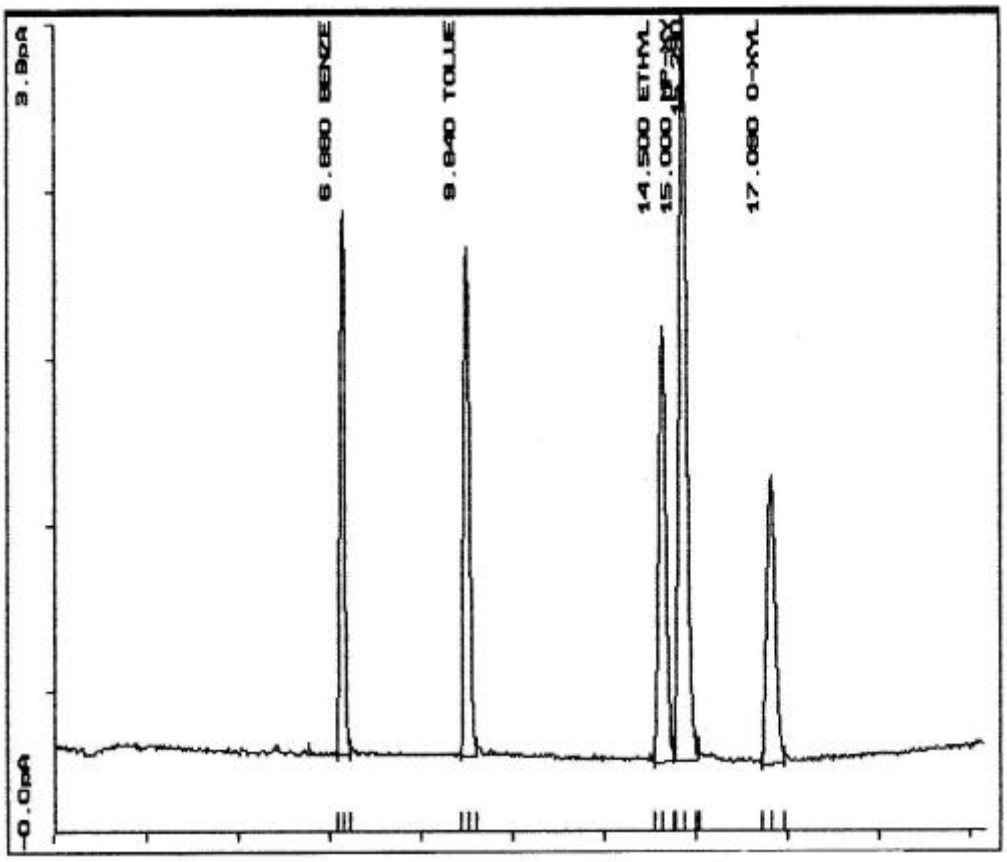
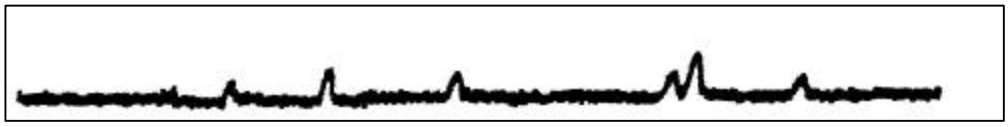


BTX in Salt Water, approximately 12 ppb of each constituent



BTX in Salt Water, approximately 0.3 ppb of each constituent

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