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Lab Solutions

Application Brief
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Determination of THM in Drinking Water Using Nitrogen Gas Instead of Helium for Purging

The Purge and Trap method for analyzing Total Trihalomethanes (TTHM) in drinking water is crucial for ensuring high-quality water delivery. This method involves purging a gas through a water sample to release volatile organic compounds (VOCs) like THMs. The VOCs are then trapped, concentrated, and analyzed using a gas chromatograph.

Traditionally, helium has been the go-to purge gas due to its inert properties and efficiency. However, the increasing cost of helium has put a strain on laboratory budgets. The THM 1000 Selective VOC Analyzer addresses this issue by allowing laboratories to use either helium or nitrogen as the purge gas. The use of nitrogen provides equivalent performance to helium but at a significantly lower cost per sample, offering substantial savings for laboratories while maintaining the accuracy and reliability of the analysis.

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The THM 1000 has fully integrated the purging, trapping, separation and detection into one instrument. After calibration of the four THM compounds of interest, Chlorform, Bromodichloromethane, Chlorodibromomethane, and Bromoform, from the range of 5 ppb to 100ppb, a sample of 40ppb was analyzed multiple times using helium as a purge gas and then using nitrogen as a purge gas. The precision and accuracy are shown in the table below.

Results of 40 ppb Standard Analyzed as an Unknown

Helium Purge Gas				Nitrogen Purge Gas		
Compound	Average	Std Dev.	%RSD	Average	Std. Dev.	%RSD
Chloroform	40.8	1.6	4.0%	39.8	0.5	1.2%
Bromodichloromethane	40.3	2.8	6.9%	40.7	0.6	1.4%
Chlorodibromomethane	38.7	2.5	6.5%	40.3	0.4	1.1%
Bromoform	38.4	2.7	7.0%	41.5	1.1	2.7%

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