

Tuesday Morning Poster Session 10000-1700P

Improvements in Inertness of GC Inlets, Large Volume Injections, and the impact on EPA 8270 Results

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Abstract.

EPA 8270 for Semi-volatile analysis has been accepted as a benchmark for performance assessment of inlet systems in capillary GC analysis. The compounds of interest span a wide range of reactivity and volatility, and have challenged the analyst to provide accurate results free from artifacts. The source of the vast majority of these “artificial results” has been the heated inlet. Although the purpose of the inlet is simply the vaporization of the sample and solvent for transferring the material into the GC column, in many cases this entire process creates artificial results. More often than not, artifacts in EPA 8270 analyses manifest themselves as the loss or reduction of the response from a compound of interest.

Classic deactivation of an Inlet system has focused on deactivating a borosilicate liner by reacting the free silanols on the surface with an organochlorosilane reagent. Deactivation in this manner can be temporary, especially in the presence of low levels of organic peroxides, acids or bases.

In our research developing improved Inlets for GC, we have determined that the inlet liner deactivation is only one of many problems. But many other components have significant relevance in reducing artifacts and improving performance. In this Lecture we will present data showing the improved results using our TitanXL installed in an HP/Agilent 6890GC in the classic EPA 8270 analysis. Data showing the improvements in stability as measured from the breakdown evaluation of DDT and Endrin, as well as more uniform, linear response across the entire mass range will be presented.

In addition, advantages of applying Large Volume Injection techniques to the EPA 8270 method will be shown using the TitanXL Inlet system.