

7<sup>th</sup> International Conference and Exhibition on

# Analytical & Bioanalytical Techniques

September 28-30, 2016 Orlando, USA

## Increasing efficiency by using dual detector on VOC analysis with an agilent GC

**Yuhui Zhao**

Epcor Water Service Canada, Canada

Monitoring volatile organic compounds (VOC) and Disinfection-by-Product such as Trihalomethanes (THM) in water samples, is one of the major tasks routinely carried out in our laboratory. Due to its low cost, simplicity, high sensitivity and wide linear range to non-chlorinated organic compounds, gas chromatograph with a flame ionization detector (GC-FID) is always our first choice of instruments. However, FID has its own limitations. The low sensitivity of FID to multi-chlorinated VOCs may not satisfy the low detection limit requirement. In some cases, these compounds need to be analyzed on a more sensitive (but specific) detector, such as an Electron Capture Detector (ECD). Further, FID responds to any carbon-containing organic compounds, and cannot distinguish those co-eluted. Co-eluted compounds are often re-analyzed on a different instrument (or detector) for confirmation. A significant amount of time and effort was spent on these repeated analyses. To overcome these difficulties, we used a one-injector, one-column and dual-detector (FID and ECD) configuration. Sample injected through the inlet, separated by a capillary column, and the effluent is split into two streams. The major stream with over 95% of the flow directed to the FID, and the minor stream with less than 5% of flow directed to an ECD. Thus, with a single run, two sets of data are obtained simultaneously. A macro-program was developed in-house to do the data handling. The program compares the two sets of data and makes judgment on compound identification. Some of the wrongly identified compound results are automatically converted to the right value. This eliminated the necessity of using a second set of analytical instruments, or switching the column back and forth between detectors. With this practice, not only time and effort are saved, but also the certainty in data quality is significantly increased.

### Biography

Yuhui Zhao has completed his PhD in Analytical Chemistry from the University of Alberta in 1995. He has been working in a few analytical laboratories for the past 20 years as a Senior Scientist. His research and development interests cover the areas of Inductively Coupled Plasma (ICP)-Optical Emission Spectroscopy, ICP-Mass Spectrometry, GC and GC-Mass Spectrometry. He is currently working as a QA Scientist at Epcor Water Service Inc., Edmonton, Alberta, Canada.

hzhao@epcor.ca

### Notes: