

Measuring BTEX with a Commercial GC-PID System in an Oil and Gas Field

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The air quality in several oil- and natural gas- (O&NG) producing regions in the U.S. has been under scrutiny. Some O&NG processes can emit compounds to the atmosphere that are detrimental to human health. Among those compounds are benzene, toluene, ethylbenzene, and xylenes (BTEX), which are classified as Hazardous Air Pollutants by the Environmental Protection Agency. This work shows *in situ* BTEX measurements conducted near Greeley, CO during the summer of 2018. We used a commercial gas chromatograph with a photo-ionization detector (GC-PID Series 9100 GC-PID, MOCON, Lyons, Colorado, U.S.A.), which analyzes an air sample every six minutes.

The equipment was operated inside an instrumented van that provided semicontrolled environmental conditions. The instrument showed consistent results through the measurement period with the exception of certain events when ambient temperature changed dramatically. In those instances, the retention time of the compounds in the chromatograms shifted. The GC-PID software did not recognize the peaks and we used a different software (gcplot, NOAA-CCG) to reprocess all chromatograms.

This work presents the results of different instrument tests, including response curves and detection limits. We also show the data acquired during the summer of 2018. This is one of the first datasets that show continuous measurements of BTEX in a multiday field study.

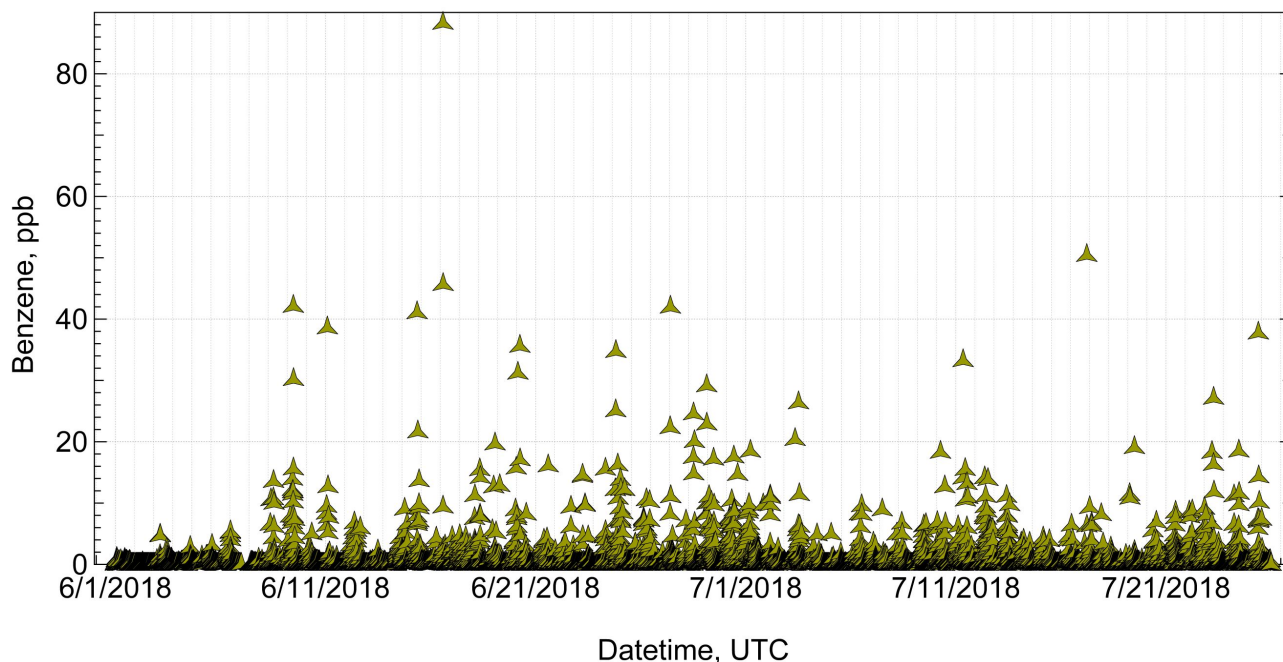


Figure 1. Time series of benzene during the summer of 2018.