

Analysis of C₁-C₉ Hydrocarbons

Applications:

Ozone Precursors

Combustion Process

Industrial Process

Hydrocarbons once released into the atmosphere react with atmospheric oxidants such as the hydroxyl radical (OH), peroxy radical (RO₂), nitrate radical (NO₃), and ozone (O₃). Volatile Organic Compounds (VOC) play an important role in the formation of tropospheric ozone. Reaction of methane with oxidants is slower than other hydrocarbons generally known as non-methane hydrocarbons (NMHCs). Thus, it is important to monitor concentrations of volatile organic compounds especially in urban areas such as Southern California.

The USEPA and local air pollution control districts such as South Coast Air Quality Management District (SCAQMD) have regulated the emissions of volatile organic compounds from both stationary and mobile sources. The USEPA method 18 is for sampling and analysis of volatile organic compounds from stationary sources. Samples are collected in Tedlar bags and analyzed using a gas chromatograph equipped with flame ionization detector (GC-FID). In this method, the hydrocarbons are speciated, whereas SCAQMD methods (SCAQMD method 25.1, and 25.3), the volatile organic compounds are not speciated. The hydrocarbons are analyzed together as total non-methane organic compounds (TNMOC).

At Quantum Analytical Services, Inc. we are well equipped to perform both the USEPA method 18 and SCAQM methods for the analysis hydrocarbons (C₁-C₉). For the USEPA method 18, methane, ethane, propane, n-butane, isobutene, n-pentane, isopentane and other hydrocarbons are separated via analytical column then detected by FID detector. The detection limit for hydrocarbons is 0.2 ppmv. A typical hydrocarbons chromatogram is shown below. For more information about hydrocarbons analysis please contact Dr. Andrew Kitto.

