Distribution and Speciation of non-methane hydrocarbons in the Uinta Basin atmosphere

Production of oil and natural gas is associated with emissions of non-methane hydrocarbons (NMHC) into the atmosphere. NMHC emissions from the oil and gas industry in Utah’s Uinta Basin are important precursors to wintertime ozone production. In addition, some NMHC have direct impacts on human health. In particular, long-term exposure to low concentrations of benzene is associated with an increase in cancer risk. We have measured speciated NMHC concentrations at various sites around the Uinta Basin since 2012. NMHC speciation is different in oil versus gas-producing regions of the Basin, and often contains a clear traffic signature in Uinta Basin cities. In general, alkanes dominate NMHC in Uinta Basin air, with shorter-chain alkanes being more abundant. Aromatics, including benzene, toluene, ethylbenzene, xylenes (BTEX) and others, make up 2.7 ± 1.1% by volume of total NMHC in air strongly influenced by oil and gas-related emissions. NMHC concentrations increase by 3-4 times during inversion episodes, but usually remain above background levels even on days with a well-ventilated atmosphere. This poster will include information about the distribution, speciation, and short-term temporal variability of NMHC in the Uinta Basin, as well as implications for ozone production and health.