NEW NETWORK-READY CONTINUOUS MONITORS FOR THE DETERMINATION OF AMBIENT FINE PARTICLE MASS AND CHEMICAL COMPONENTS

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Abstract

The worldwide concern over adverse health effects from fine particles has sparked an interest in instrumentation that can provide continuous information on particulate matter (PM) fine mass concentration and certain key chemical components contained therein (e.g., particulate nitrate, sulfate, organic carbon, elemental carbon, metals, etc.). Regulatory agencies and research programs both have a common need for high time resolution targeted PM fine mass data that can be used for public awareness, health research and regulatory planning.

Rupprecht & Patashnick Company (R&P) has introduced a suite of new monitoring tools to provide direct measurement of PM-2.5, particulate nitrate, particulate sulfate and particulate carbon. The Series 1400a TEOM® PM-2.5 Monitor measures near real-time PM mass concentration using a new sharp-cut cyclone inlet, optional sample equilibration system, and "AB" technology for enhanced short-term measurement stability. The Series 5400 Ambient Carbon Particulate Monitor provides the measurement of organic and elemental carbon using an automatic thermal-CO_2 method. The Series 8400N Ambient Particulate Nitrate Monitor determines the mass concentration of particulate nitrate contained in PM-2.5 every ten minutes using the flash vaporization technique developed by Aerosol Dynamics. Its sister instrument, the Series 8400S Ambient Particulate Sulfate Monitor, provides particulate sulfate data. A brief overview of the theory of operation and physical configuration for each monitor is discussed. Field data and applications will be presented.