Product: SASS 2300

Application: Environmental Air Monitoring – OEM Application in APDS System

SASS 2300 components built by Research International

The Lawrence Livermore National Laboratory (LLNL) worked on a fixed installation monitoring system for the biomonitoring of public spaces for several years. The culmination of this work was the Autonomous Pathogen Detection System, or APDS. This system is designed to continuously monitor for biowarfare pathogens on a stand-alone basis for unattended periods of up to 2 weeks. Prototypes were installed in the subways of New York and Washington, D.C. shortly after the 9-11 terrorist attack, and have been operational since.

The wet aerosol collector used in this system is the same aerosol cyclone collector and electronics package used in the SASS 2300: in essence, this is an OEM application of the 2300's core technology. LLNL selected the SASS 2300 technology because it could be operated continuously, was compact, consumed much less power than alternatives, and was easy to clean. The OEM air samplers used in those prototype APDS units have arguably the longest user histories and track records of any aerosol collectors now on the market.

In that application, the level of airborne debris has been sufficiently high that the systems have been serviced about once every two weeks. In terms of our equipment, this servicing has included either an ultrasonic cleaning in warm soapy water, and/or mechanical cleanout of the recirculation tube with a pipe cleaner. When the aerosols in these environments were chemically analyzed several years back, the highest elemental concentrations were found to be iron and sodium- apparently from railway track dust and human sweat, respectively. Initially transparent cyclones returned to us for refurbishing have generally been a golden brown, ostensibly due to the absorption of iron oxides by the cyclone's polymer body. However, this color change did not affect the cyclone's performance.

Research International has worked with Northrup Grumman to construct a large number of APDS systems for prototyping and field evaluation. The funding for this effort has been supplied by the U.S. Department of Homeland Security (DHS). The subsystems built by RI included not only the SASS wet cyclones, but also all electronic and analytical instrumentation related to air handling, i.e., Research International has been responsible for the entire air processing subsystem used in the APDS.

This program is an example of the SASS 2300 technology being used in a major non-military public biomonitoring system.

References:

1) M. McBride, et.al., Autonomous Detection of Aerosolized Bacillus anthracis and Yersinia pestis, Anal. Chem. 2003, 75, 5293-5299.