

Edison Science Day

June 10, 2009

Raindate: June 16, 2009

Today's Schedule

Time	Event	Location
9:00 – 9:30 AM	<i>Bus Arrives, Opening Remarks</i>	<i>205 Main Conference Room</i>
9:30 – 11:10 AM	Session A	Please refer to your Group Schedule
11:10 AM – 12:45 PM	Session B	
12:45 PM – 1:45 PM	Poster Session and Refreshments	205 Main Conference Room
1:45 – 3:30 PM	Session C	Please refer to your Group Schedule
3:45 PM	<i>Bus Departs for NY Office</i>	<i>In front of Building 10</i>

Programs @ Poster Session

- ❖ **Biological & Technical Assistance Group**
- ❖ **Region 2 Brownfields Program**
- ❖ **Region 2 Mobile Analytical Laboratory**
- ❖ **ORD Programs**
- ❖ **Pollution Prevention (P2) at DESA: The Paradigm, Case Studies, Opportunities, and the Prognosis**
- ❖ **ORD Regional Science Program: Opportunities and Recently Funded Projects**
- ❖ **DECA Lead Program**
- ❖ **DECA Pesticide Program**

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List of Demonstrations

1) REOC Overview – ERRD

- ❖ Introduce the WEBEOC, hotline log and NRC Reports
- ❖ Display and discuss the RAE capabilities and data management with SCRIBE
- ❖ Demo and discussion of RAT
- ❖ Exporting to SCRIBE and ARCGIS, etc
- ❖ Site Surveillance Cameras and potential applications

2) Robotic Recon – ERT

- ❖ ERT has developed and fielded a robotic recon capability to perform first-entry missions in high hazard response scenarios. The system is based on a Packbot EOD robotic platform (www.irobot.com) enhanced with a sensor array developed by DOD and customized for EPA mission requirements. ERT Robotic Recon delivers the capability to perform a robotic reconnaissance in a hazardous response scenario yielding real-time environmental monitoring data and visual tele-presence. The sensor and visual resources delivered by the robot are designed to yield adequate decision support data for health and safety evaluation of the hot zone

3) Mobile Analytical Laboratory – DESA

- ❖ The Region 2 Mobile Analytical Laboratory provides rapid and efficient on-site analytical laboratory capability to support hazardous waste site investigations and remediation efforts for Region 2 Superfund, Brownfields and RCRA programs. The Mobile Lab analyzes environmental samples to help clean up contaminated sites in order to protect the public from harm. Project Managers are provided a hardcopy data package and an electronic spreadsheet summarizing quality assured results. This information results in rapid return to productive use of land for the public and private sector.

4) Sub-Slab Port Installation & Air Sampling – DESA

- ❖ The SST will be presenting the first step in assessing the vapor intrusion pathway; sub-slab port installation. The demonstration will include: a brief explanation of the vapor intrusion pathway, drilling a hole through slab, port construction and installation and mock sample collection. Protective hearing devices will be provided.

5) Milestone DMA-80 (Direct Mercury Analyzer) Demonstration – DESA

- ❖ Mercury is a metal that impacts health and is definitely a pollutant of concern. The DMA-80, new to the metals prep lab, using thermal decomposition technique, analyzes aqueous, soil and fish tissue samples directly, in 5 minutes, eliminating digestion, chemical pre-treatment and waste disposal. Our current cold vapor technique requires digestion with many chemicals and generates a tremendous amount of waste and takes hours to complete. These two techniques will be demonstrated.

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6) Purge & Trap Gas Chromatography / Mass Spec Analysis of VOCs – DESA

- ❖ Purge & Trap GC/MS is a powerful analytical tool which allows an analyst to take an organic solution, separate the individual components and identify each of them. Furthermore, the analyst can determine the quantities (concentrations) of each of the components

7) Analysis of PCB congeners in aqueous matrix with HRGC/HRMS – DESA

- ❖ HRGC/HRMS is a powerful technique for PCB analysis. Besides being able to quantify part per trillion (ppt) levels, HRGC/HRMS is able to quantify the 209 PCB congeners (individually or as co-eluters). Other analytical techniques (e.g. GC-ECD) only quantify PCB based on comparison with Arochlor® patterns, not having in consideration that PCB suffer degradation while in the environmental media. During this presentation the following aspects will be covered: a) HRGC/HRMS operation; b) sample preparation and analysis; c) quantitation and quality assurance; d) case study.

8) Bio-Assessment Exhibit – DESA

- ❖ I will demonstrate how MAB routinely conducts biological assessments of streams, rivers and lakes, collecting and analyzing benthic macroinvertebrates, fish, and algae data to support EPA regional, state and local governments, and other customers. Assessments using biological protocols are used extensively in EPA Region II to support the development and implementation of biological indices and biological criteria in State water quality protection programs and water quality standards.

9) Quantification of *Enterococci* using membrane filtration and Quantitative (Real-Time) Polymerase Chain Reaction – DESA

- ❖ There is a need for more rapid methods to determine the microbial water quality at bathing beaches. The current approved methods such as membrane filtration for measuring concentrations of *Enterococcus sp.* are not available for at least 18 hours. Due to the fluctuating nature of microbial contamination, this delay makes it difficult for beach managers to make decisions regarding beach closures and/or swimming restrictions. An alternative method by qPCR assays has shown promise to monitor the microbial water quality at recreational beaches. Primers set and probes are available for the specific detection of *Enterococcus sp.* in less than 6 hours.

10) NPDES Sampling – DESA

- ❖ NPDES - As authorized by the CWA, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. The NPDES permit program is responsible for significant improvements to our Nation's water quality

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11) Through the Probe (TTP) Air Sampling Method – DESA

- ❖ The Mobile Air Lab conducts field performance audits of State and Local air monitoring stations and laboratories for the gaseous criteria pollutants (CO, NO_x, O₃, and SO₂) and particulates. The Mobile Air Lab evaluates existing and potential new air monitoring sites for compliance with EPA siting criteria. The Region 2 Air Standards Laboratory supports our field auditing activities and assists State and Local air monitoring agencies in complying with EPA air monitoring QA requirements. The Standards Laboratory capabilities include accuracy verification of Primary and transfer ozone standards, articulate filter weighing, gas flow standards, pollutant gas standards, as well as SO₂, CO, NO_x, and O₃ audit instrumentation

12) PM-2.5 Performance Evaluation Program (PEP) – DESA

- ❖ Demonstration of a portable PM_{2.5} particulate air quality monitor used in the national PM_{2.5} Performance Evaluation Program (PEP). The PEP monitors are used to collocate with a state's or local monitoring agency's routine PM_{2.5} monitor. PEP PM_{2.5} data collected are used to provide an independent estimate of bias in the nationwide PM_{2.5} network.

13) Ground Water Monitoring – DESA

- ❖ The water found in monitoring wells is not a good representation of formation water and needs to be purged at the screened interval prior to the collection of groundwater samples. Low-flow purging minimizes mixing between the stagnant casing water and water within the screened interval

14) Small Boat Fleet Viewing – DESA

- ❖ EPA's small boats will be on display with an assortment of sampling equipment that we use to collect both sediment and water. Boats will on display in front of Bldg 238 (inside if weather dictates).

15) Air Response Equipment Trailer – ERT

- ❖ The demo will be showing the various air monitoring and sampling equipment that ERT has for both emergency response and Superfund work. There will be chemical and biological agent detection and sampling equipment as well real time VOC, particulate and various other inorganic monitoring equipment on display.

16) Helicopter Viewing – DESA

- ❖ The Environmental Protection Agency, Region 2 Edison, through the Office of Aircraft services, contracts a helicopter for purposes of environmental monitoring and surveillance. Monitoring includes, dissolved oxygen monitoring for trends, and collecting water samples to help NY and NJ meet commitments to the National Shellfish Sanitation Program. Aerial surveillance of the NY/NJ Harbor Complex for floatable debris is conducted to coordinate clean up to prevent beach closures. The helicopter is also used for aerial surveillance of superfund sites and to respond quickly to any environmental emergencies that might occur in New York or New Jersey.

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17) TAGA Air Lab – ERT

- ❖ The US Environmental Protection Agency's Environmental Response Team has three 36-foot, self contained mobile laboratories to conduct ambient air monitoring, sampling, and analyses. TAGA is a triple quadrupole mass spectrometer, which is capable of real-time analyses in the stationary or mobile modes, with positive or negative ionization, and using either a low pressure chemical ionization (LPCI) source or an atmospheric pressure chemical ionization. In addition to the TAGA, the laboratory also contains an Agilent gas chromatograph with an electron capture detector, a photo-ionization detector, and a mass selective detector. The gas chromatograph is fitted with an OI Analytical 4560 gas concentrator, which employs a multi-sorbent resin bed to allow gas sample concentration for subsequent analysis VOCs.

18) Urban Watershed Facility – ORD

- ❖ The Urban Watershed Research Facility (UWRF) is an isolated, 20-acre open space within EPA's 200 acre Edison facility established to develop and evaluate the performance of stormwater management practices under controlled conditions. The facility includes greenhouses that allow all-season operation, analytical laboratories for on-site analysis of common chemical and microbial stressors, a high-bay engineering development and support area, automated electronic monitoring and automatic sampling equipment, office spaces, and storage. The facility provides a safe location to collect engineering data needed for design and evaluation.

19) Porous Pavement Parking Lot – ORD

- ❖ This project examines porous pavement systems in a newly constructed parking lot next to Building 205 at the Edison Environmental Center. This project examines three different porous systems: porous asphalt, porous concrete, and permeable interlocking concrete paving stones. ORD's National Risk Management Research Laboratory is leading the evaluation of the water quality of rainfall and runoff after filtration through a porous pavement system. This study monitors water quality and flow with a combination of traditional measures and state-of-the-art in-situ instrumentation.