

Collaborative Opportunities for Meeting US Environmental Protection Agency Measurement and Monitoring Needs

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The Agency needs to . . .

- ▶ Support more method development, so we can readily implement state-of-the-art monitoring technology to solve environmental problems;
- ▶ Establish a consistent and stable business-driven framework to register all Agency data in an Agency catalogue; and
- ▶ Consistently apply the data life-cycle, and enforce data quality, to create greater confidence in the reliability of data and greater insurance of its appropriate use.



Overview

- ▶ Background
- ▶ Monitoring Assessment
- ▶ Specific Opportunities
 - Administration's Priorities
 - Program's Challenges
 - Collaborator's Opportunities
- ▶ Next Steps



Office of the Science Advisor (OSA)

- ▶ **OSA Purpose** – To support the Science Advisor's key responsibilities:
 - Advise EPA Administrator on science and technology (S&T) issues;
 - Hold a corporate view and coordinate cross-agency S&T policy issues;
 - Resolve conflicts on science and science policy;
 - Provide a vision on S&T and advance emerging issues; and
 - Serve as face and spokesperson for agency science overall.

- ▶ **OSA Initiatives** – Science and Technology, Measurement and Monitoring, Modeling, Risk, Human Health, Information Management



Science and Technology Policy Council (STPC)

- ▶ **STPC Purpose** – To serve as a mechanism for addressing EPA's many significant science policy issues beyond regional and program boundaries.
- ▶ **STPC Initiatives:**
 - Drive technology innovation to solve discrete environmental and health problems.
 - Incorporate principles of sustainability into EPA's programmatic work.
 - Advance environmental protection and human health with community-relevant frameworks.



Forum on Environmental Measurements (FEM)

- ▶ **FEM Purpose** – To promote consistency and consensus on measurement methodology, monitoring, technology, and laboratory science issues with multi-program impact.
- ▶ **FEM Initiatives:**
 - Validate and disseminate methods for sample collection and analysis.
 - Ensure monitoring studies are scientifically rigorous and statistically sound to yield representative measurements.
 - Employ a quality systems approach to ensure data gathered and used by the Agency is of known and documented quality.



Monitoring Assessment – Timeline

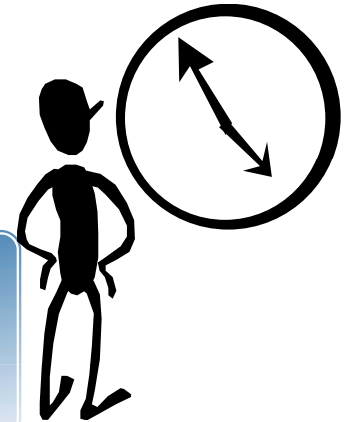
Regional White Paper – December 2008

FEM Charged to Explore Paper – December 2008

FEM Recommendation for Assessment – April 2009

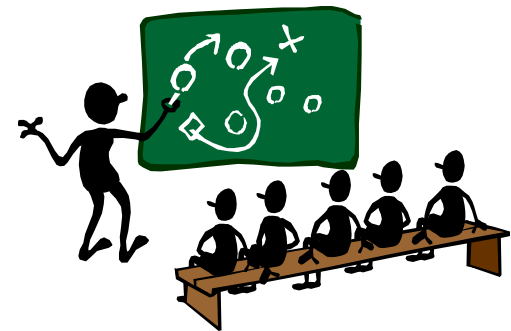
Monitoring Assessment – June 2009 to August 2010

Monitoring Strategy – March 2011 thru Present



Purpose Statement / Charge

- ▶ **Purpose** – We need to synthesize monitoring programs to expand our scientific capabilities, information, and knowledge to meet the Agency's mission of protecting human health and the environment.
- ▶ **Charge** – Conducted a stepwise process and produced:
 - an inventory of routine monitoring programs;
 - a list of needs and data gaps; and
 - a list of organizations for pursuing leveraging opportunities.



Definition

Monitoring is the ongoing measurement or assessment of environmental stressors and related parameters in various media, humans, plants, or animals to:

- Determine **status and trends** of core physical, chemical, and biological indicators of ambient conditions in the nations air, land, and water resources;
- Measure **compliance** with statutory and regulatory requirements;
- Inform **risk and exposure** assessments;
- Develop **public and ecosystem** health advisories; or
- Support **research** investigations.



Inventory

- ▶ Focused on Routine Programs
 - Managing Agency
 - Purpose / EPA Data Use
 - Media / Monitoring Technology
 - Regulatory / Statutory Authority
 - Funding Vehicle and Funding Source
 - International Relevance

- ▶ Database
 - Program Listing
 - Individual 'Sheets' for Each Entry
 - Website Links (*where available*)



Data Gaps and Needs – Administrator's Priorities

- ▶ Taking Action on Climate Change
- ▶ Improving Air Quality
- ▶ Assuring the Safety of Chemicals
- ▶ Cleaning Up Our Communities
- ▶ Protecting America's Waters
- ▶ Expanding the Conversation of Environmentalism and Working for Environmental Justice
- ▶ Building Strong State and Tribal Partnerships



Common Theme – Measurement and Method Development

- ▶ Lack of environmental measurement techniques and analytical methods for routine monitoring.
- ▶ State of the art monitoring technology needs to be developed and utilized.
- ▶ Applicable FEM Efforts:
 - Flexible Approaches to Environmental Measurement
 - Method Validation and Peer Review Policies with Accompanying Guidelines
 - Environmental Technology Advancement



Common Theme – Data Management

- ▶ Multiple databases, processes, procedures, and methods for the same information.
- ▶ Consistent and stable business driven framework needs to be prescribed with all data generated registered into an Agency catalogue.
- ▶ Applicable FEM Efforts:
 - Staged Electronic Data Deliverable (SEDD)
 - Discussions with the American Public Health Laboratories (APHL)



Common Theme – Data Analysis or Assessment

- ▶ Confidence in the reliability of data and ability to use appropriately are important.
- ▶ Consistent application of the data life-cycle and enforce data quality policies for greater confidence.
- ▶ Applicable FEM Efforts:
 - Glossary for Consistent Use of Method Detection/Quantitation, and Calibration Terms
 - General Laboratory Competency Policies
 - Competency for EPA Laboratories
 - Competency for Organizations Performing Environmental Data Operations under Agency-funded Acquisition Agreements



Common Theme – Emergency Response

- ▶ Preparedness for responding to emergency situations.
- ▶ More flexible array of methods to potentially identify unknown compounds at low concentrations in a time-sensitive manner.
- ▶ Applicable Agency Efforts:
 - Laboratory Networks
 - Standardized Methods
 - Multi-Agency Guidelines
 - Method Validation and Peer Review Policy



Program's Challenges

- ▶ Methods development research needs exceed available resources.
- ▶ New monitoring requirements continually strain existing resources.
- ▶ Ability to investigate new complex environmental issues are constrained by resources.

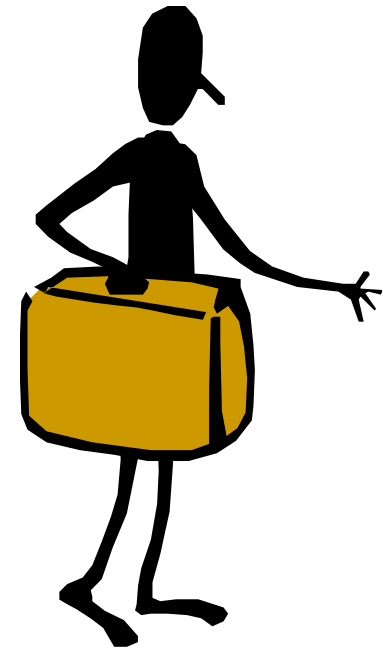
RESOURCES!!!



Collaborator's Opportunities

- ▶ Monitoring Needs to be ...
 - Real-time (Continuous, Automated)
 - Low-cost
 - Multi-pollutant
 - Portable
 - Innovative

- ▶ Wish List Slogan



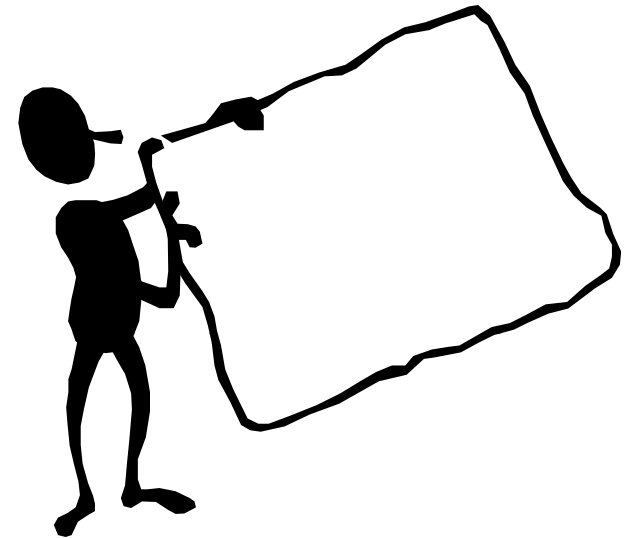
**BETTER, CHEAPER,
SMALLER, FASTER!!!**



Specific Prioritized Opportunities

▶ More Feasible Projects

- Ultrafine Particles (Total)
- PM2.5 Continuous Mass
- Acrolein
- Carbonyls (Sampling, Analysis)
- Organic Aerosols



▶ Less Feasible Projects

- Continuous Hazardous Air Pollutants
- PM2.5 Continuous Speciation – Nitrates
- Odor (Sampling, Identification)
- Air Toxics – “The Dirty Dozen”



Specific Identified Opportunities

- ▶ Dry / Wet Deposition Monitoring Equipment / Analysis
- ▶ Near-road Measurements
- ▶ Real-time Monitoring – Pathogens, Harmful Algal Blooms (HABs)
- ▶ Ultrafine Particles
- ▶ DNA Bar-coding Methods
- ▶ Measuring Effectiveness of Controls
- ▶ Benthic Indices
- ▶ Priority Contaminant Monitoring
- ▶ Continuous Monitoring / Methods Assessing Large Water Sources
- ▶ Citizen Monitoring Initiatives / Voluntary Monitoring



The Agency is working to . . .

- . . . support more method development.
- . . . establish a framework to register all data.
- . . . enforce data quality.

Through . . .

- . . . funding opportunities.
- . . . exploring projects of mutual interest with collaborators.
- . . . outreaching to partners with mutual interest.
- . . . examining exiting systems and programs.



What is next . . .

- ▶ Identify More Specific Project Needs
- ▶ Explore Use of Existing Tools and Systems
- ▶ Establish Additional Collaborative Relationships
- ▶ Identify Existing Funding Sources
- ▶ Establish New Funding Initiatives
- ▶ Develop Strategic Plan to Meet Needs
- ▶ Develop System to Sustain Program Inventory
- ▶ Continue Outreach to Stakeholders





THANK YOU!!!

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