



Environmental Data Management – An EPA Perspective



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Forum on Environmental Measurements (FEM)

- Established in 2003 to:
 - Promote consistency and consensus within the EPA on measurement issues
 - Provide an internal and external contact point for addressing measurement methodology, monitoring, and laboratory science issues with multi-program impact



FEM

- Develops policies to guide the Agency's measurement community in:
 - Validating and disseminating methods for sample collection and analysis
 - Ensuring that monitoring studies are scientifically rigorous, statistically sound, and yield representative measurements
 - Employing a quality systems approach that ensures that the data gathered and used by the Agency is of known and documented quality



FEM External Support

- National Environmental Monitoring Conference provides a venue for the Environmental Measurement Community to exchange ideas and information
- TNI for developing consensus based standards
- Environmental Laboratory Advisory Board (ELAB) – a Federal Advisory Committee to advise EPA on measurement issues



EPA Monitoring Assessment: Background

- From June 2009 - October 2011, FEM conducted a monitoring assessment and strategy effort across EPA
- Used a stepwise process to:
 - Develop an inventory of monitoring programs
 - Conduct a needs and data gaps analysis
 - Identify leveraging opportunities



Assessment Results Common Themes (1)

- Data Management
 - There are multiple databases, processes, procedures, and methods for the same information
 - There is a need to develop a consistent and stable business driven framework with all data generated registered into an Agency catalogue



Assessment Results Common Themes (2)

- Data Analysis or Assessment
 - Confidence in the reliability of data and ability to use data appropriately are important
 - Consistent application of the data life-cycle and greater use of data quality policies for greater confidence



EPA Data Management: Why it is the way it is

- Historical: EPA was created by consolidating environmental programs from various federal departments
- Statutory: EPA programs have authorities under different environmental laws



Example: Analytical Methods Impact

- Development process
 - Different names for same/similar terms
- Reporting Requirements
 - Different needs for data assessment



Different Names for Similar/Same Terms

- Term: A method blank spiked with known quantities of analytes
 - Called Laboratory Control Sample (LCS) by EPA ORD, OSWER and OCSPP
 - Called Ongoing Precision and Recovery Standard (OPR) by EPA OW
- Other terms used: Laboratory Fortified Blank, Spiked Blank



FEM Solution

- Environmental Measurement Glossary of Terms (January 2010)
- Located at:
http://www.epa.gov/fem/pdfs/Env_Measurement_Glossary_Final_Jan_2010.pdf



Different Needs for Data Assessment

- Superfund: Laboratory Results used for site cleanup and determining potentially responsible party liability
- Safe Drinking Water Act: Laboratory results used to determine if Maximum Contaminant Levels (MCL) for pollutants in drinking water are exceeded



Reporting Requirements

- Superfund Contract Lab Results: labs submit all Quality Control (QC) data to EPA (including instrument output information) to allow for analyte identification and result recalculation (for legal defensibility)
- SDWA MCL Lab Results: Lab QC data generally not reported to EPA.



FEM Next Steps

- Putting together an Action Team for Environmental Data Management
- Team will begin by focusing on Field and Analytical Data (with related meta data)



Action Team - Proposed Tasks

- Develop an inventory of data standards or templates used by EPA to receive field and analytical data
- Identify commonalities in the formats
- Identify potential leveraging opportunities, where practical



Data Standardization: External Interest



Environmental Data Exchange and Standardization Session

- Right here at NEMC
- Thursday August 9
- From 3:30 to 5:00 PM
- Moderator: Robert Whitehead, ChemWare, Inc.



Panelists

- Charles Kovatch, USEPA - WQX/STORET
- Jack Krueger, APHL - ERLN EDD Type 1t/2
- Anand Mudambi, USEPA/OSA - SEDD
- Pravin Rana, USEPA - SDWA XML Schema
- Randy Whittington, Gulf Coast Analytical Laboratories - Data Generator
- Michael Wichman, University of Iowa State Lab - Data Generator



Roundtable Discussion After Panel Presentations

- Explore the formation of a task force or similar working group comprised of representatives from private and public sectors to work on environmental data standardization



Workgroup Goals (Proposed)

- Determine whether processes that led to widespread adoption of HL7 for clinical data could serve as a roadmap to standardization across the environmental community
- Consolidate crosswalks already taken place and distribute the information across all stakeholders



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