



International Conference and Training  
**Triad Investigations**  
New Approaches and Innovative Strategies

June 10, 11, and 12, 2008  
University of Massachusetts Amherst

[www.teiconferences.com/triad](http://www.teiconferences.com/triad)

Conference Co-Hosts:

US EPA Office of Superfund Remediation and Technology Innovation  
The Environmental Institute, UMass Amherst



# Conference at a Glance

## Tuesday June 10

8:30 - 9:00	Welcome and Overview		
9:00 - 12:00	Basic Training	Advanced Training 1	Advanced Training 2
12:00 - 1:30	Lunch and Exhibit Hall		
1:30 - 5:00	Basic Training (continued)	Advanced Training 3	Advanced Training 4
5:00 - 6:30	Exhibit Hall and Reception		

## Wednesday June 11

8:30 - 10:00	Plenary Session				
10:00 - 10:30	Break / Exhibit Hall			Triad Tool Room	Posters displayed
10:30 - 12:00	Platform Session 1	Platform Session 2	Platform Session 3	Triad Tool Room	Posters displayed
12:00 - 1:30	Lunch and Exhibit Hall				
1:30 - 3:00	Platform Session 4	Platform Session 5	Platform Session 6	Triad Tool Room	Posters displayed
3:00 - 3:30	Break / Exhibit Hall			Triad Tool Room	Posters displayed
3:30 - 5:00	Platform Session 7	Platform Session 8	Platform Session 9	Triad Tool Room	Posters displayed
5:00 - 6:30	Poster Session and Reception				
6:30 - 8:30	Workshop 1		Workshop 2		Workshop 3

## Thursday June 12

8:30 - 10:30	Vendor Demos Inside and Out				
10:30 - 12:00	Platform Session 10	Platform Session 11	Platform Session 12	Triad Tool Room	Posters displayed
12:00 - 1:30	Lunch and Exhibit Hall				
1:30 - 3:00	Platform Session 13	Platform Session 14	Platform Session 15	Triad Tool Room	Posters displayed
3:00 - 3:30	Break / Exhibit Hall			Triad Tool Room	Posters displayed
3:30 - 5:00	Platform Session 16	Platform Session 17	Platform Session 18	Triad Tool Room	Posters displayed

**8:15 Welcome and Overview**

Paul Kostecki, *Vice-Provost for Research, University of Massachusetts Amherst*  
 Barnes Johnson, *Deputy Director, USEPA Office of Superfund Remediation and Technology Innovation*  
 James Owens, *Director, EPA New England Office of Site Remediation and Restoration*  
 Janine Commerford, *Assistant Commissioner, MADEP Bureau of Waste Site Cleanup*

**9:00 - 12:00 • Concurrent Morning Training Sessions**

**Basic Training**

**Triad Training for Managers:  
Anatomy of a Well-Structured  
Project** (8 Hr course)

Robert Howe, *Tetra Tech, Boulder, CO*  
 Kym Takasaki, *USACOE, Seattle District*

**Advanced Training 1**

**Advanced Triad Concepts:  
Best Practices for Efficient Soil Sampling  
Designs**

Deana Crumbling, *USEPA Office of Superfund Remediation and Technology Innovation, Washington, DC*  
 Robert Johnson, *Argonne National Laboratory, Argonne, IN*

**Advanced Training 2**

**Advanced Triad Concepts:  
Using 3-D and 4-D Site Characterization  
and Visualization: Planning and  
Execution Strategies For a Successful  
Project Outcome**

Todd Halihan, *Oklahoma State University, Stillwater, OK*  
 Stuart McDonald, *Aestus, LLC, Loveland, CO*

**1:30 - 5:00 • Concurrent Afternoon Training Sessions**

**Triad Training for Managers:  
Anatomy of a Well-Structured  
Project** (continued)

Robert Howe, *Tetra Tech, Boulder, CO*  
 Kym Takasaki, *USACOE, Seattle District*

**Advanced Triad Concepts:  
Flux Based Site Management**

Lynn Wood, *USEPA, Ada, OK*  
 Ron Falta, *Clemson University*  
 Suresh Rao, *Purdue University*  
 Michael Brooks, *USEPA, Ada, OK*

**Advanced Triad Concepts:  
Spatial Analysis Decision  
Assistance (SADA)**

Robert Stewart, *The Institute for Environmental Modeling, University of Tennessee*



Massachusetts  
Department  
of  
ENVIRONMENTAL  
PROTECTION

Thank you to the  
 Massachusetts Department of Environmental Protection  
 for sponsoring the Triad Conference

**8:30 - 10:00 Plenary Session: Ask the Savvy Seven** Moderator: Kirby Biggs, USEPA, Washington, DC  
 Panel of Triad practitioners from different disciplines, economic sectors, and interests, combined with federal, state, and local regulators using or espousing Triad, who will share their key messages, views, successes, and cautions, then address questions about Triad posed by conference attendees, including questions generated in Tuesday's training sessions.  
 Mikkel Anderson, IRG  
 Louis Burkhardt, Raytheon Company  
 Joe Ferrari, EPA New England (invited)  
 Joe Fiacco, ERM  
 Susan McMahon, Windham Regional Commission (invited)  
 Stuart Nagourney, NJDEP  
 Kym Tagasaki, USACE



**10:30 - 12:00 • Concurrent Morning Platform Sessions**

**Session 1: Communication / Systematic Planning**  
 Moderator: Kirby Biggs, USEPA, Washington, DC

**Stakeholder Participation and the Conceptual Site Model**  
 Richard Hammond, USEPA, Atlanta, GA

**Building a Consensus Vision using Conceptual Site Models**  
 Logan Hackett, TetraTech EMI, Boulder, CO

**Managing Social Risk and Building Social Capital as a Foundation for Innovation in Hazardous Waste Site Management - The Region III/IV DoD/State/EPA Installation Restoration Partnering Initiative**  
 Joe Foran, Management Edge, Inc., Cumberland, ME

**Session 2: Triad During RD/RA**  
 Moderator: Nicholas Nigro, Environmental Chemistry Consulting Services, Madison, WI

**Collaborative Data Sets Increase Success in Remedy Implementation**  
 Kim Lee Yarberry, CH2M HILL, Atlanta, GA

**The Use of Future First Planning, Triad, and Performance-Based Contracting to Accelerate Site Closure at Seymour Johnson AFB**  
 Martin Wangenstein, Bay West, Inc., St. Paul, MN

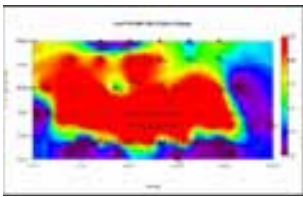
**Programmatic Methods for Addressing Contaminated Volume Uncertainties**  
 Robert Johnson, Argonne National Laboratory, Argonne, IL

**Session 3: Measurement Techniques**  
 Moderator: Stephen Dymont, USEPA Washington, DC

**In Situ Detection and Analysis of Soil Gas Samples through Ion Mobility Spectroscopy**  
 Ray Carter, Boise State University, Boise, ID

**Using Innovative Real-Time Field Analysis to Characterize a 1,4-Dioxane Plume in Wetlands Using the Triad Approach**  
 Jackson Kiker, ECC, Marlborough, MA

**Vertical Profiling Using the Color-Tec® Method to Identify Source Releases and Delineate CVOC Soil and Groundwater Plumes at the Former Naval Construction Battalion Center Davisville in North Kingstown, Rhode Island**  
 Scott Anderson, Tetra Tech NUS, Inc., Pittsburgh, PA





## 1:30 - 3:00 • Concurrent Afternoon Platform Sessions

**Session 4: Communication / Systematic Planning**

Moderator: Kirby Biggs, *USEPA, Washington, DC*

**Distance Collaboration Tools**

Jean Balent, *USEPA, Washington DC*

**Demystifying the DMA (Demonstration of Method Applicability)**

Stephen Dymont, *USEPA, Washington DC*

**Some Thoughts on Conceptual Site Models**

Bradley Call, *USACE, Sacramento, CA*

**Session 5: Triad During RD/RA**

Moderator: Nicholas Nigro, *Environmental Chemistry Consulting Services, Madison, WI*

**Integration of Flux-Based Methods and Triad Principles for DNAPL Site Management, Part I: Remediation Design and Assessment**

Suresh Rao, *Purdue University, West Lafayette, IN*

**Use of SADA to Expedite a Collaborative Soil Removal Action**

Jim Wulff, *Tetra Tech EM Inc., Boulder, CO*

**Real-time Remediation Performance Optimization**

William Girolamo, *Environmental Data Solutions Group, LLC, Foothill Ranch, CA*

**Session 6: Measurement Techniques**

Moderator: Stephen Dymont, *USEPA, Washington, DC*

**Using Mobile Measurement Computing and Communication Devices for Conceptual Site Model Refinement**

Louis Martino, *Argonne National Laboratory, Washington, DC*

**Evaluation of the Waterloo Profiler as a Dynamic Site Investigation Tool**

Maelle Duquoc, *Environmental Resources Management, Boston, MA*

**Implementing the Triad Approach Utilizing Membrane Interface Probe to Streamline Characterization**

Maria Watt, *Camp, Dresser & McKee, Edison, NJ*

## 3:30 - 5:00 • Concurrent Afternoon Platform Sessions

**Session 7: Communication / Systematic Planning**

Moderator: Kirby Biggs, *USEPA Washington, DC*

**Reasons for Using Sound Science and QA/QC Processes and Procedures**

James Mc Ateer, *QA/QC Solutions, LLC, Salem, OR*

**Enhancing Communication Amongst All Team Members to Benefit Systematic Project Planning**

Raymond Fransom, *Missouri Department of Natural Resources, Lee's Summit, MO*

**Integration of Triad into Site Management Planning**

Thomas Palaia, *CH2M Hill, Kittredge, CO*

**Session 8: Triad During RD/RA**

Moderator: Nicholas Nigro, *Environmental Chemistry Consulting Services, Madison, WI*

**Combining In Situ Remedial Technologies with a Dynamic Work Strategy at High Risk Sites for Beale AFB**

Brad Shearer, *CH2M HILL, Redding, CA*

**Triad Approach Used for Organic Content Biowall & Edible Oil Injection Chlorinated Solvent Remediation**

Mark Leeper, *Defense Logistics Agency, Defense Supply Center, Richmond, VI*

**Triad Isn't Just for Characterization Anymore: a Case Study on the Use of Triad Elements during Remedy Implementation**

Travis Shaw, *USACE, Seattle, WA*

**Session 9: Measurement Techniques**

Moderator: Stephen Dymont, *USEPA, Washington, DC*

**High Resolution Groundwater Characterization Methods and the Triad Approach**

Seth Pitkin, *Stone Environmental, Inc., Montpelier, VT*

**Hydraulic Parameter and Mass Flux Distribution Using the High-Resolution Piezocone and GMS**

Mark Kram, *U.S. Navy, Port Hueneme, CA*

**Three-Dimensional Depiction of Coal Tar in Soils and Sediments within the Overburden Stratigraphic Framework Using TarGOST®**

Scott Saroff, *CH2M HILL, Manlius, NY*

## 6:30 - 8:30 • Advanced Workshops

**Advanced Design Application and Data Analysis for Field-Portable XRF**

Stephen Dymont, *USEPA, Wash., DC*  
Deana Crumbling, *USEPA Wash., DC*  
Robert Johnson, *Argonne National Lab, Argonne, IL*

**Beyond Triad: Characterization and Long Term Management of GW Contaminant Plumes**

Mark Kram, *U.S. Navy*  
Gregg Gustafson, *Instrumentation Northwest, Kirkland, WA*

**Third Workshop to be announced**

## 10:30 - 12:00 • Concurrent Morning Platform Sessions

**Session 10: Triad Implementation**

Moderator: Stuart Nagourney,  
*NJDEP, Trenton, NJ*

**Triad: Why Isn't it Used More?**

Stuart Nagourney, *New Jersey Department of Environmental Protection, Trenton, NJ* -and-

**Triad: Implementing Triad into your Practice: If Triad is so Great, Why Hasn't it Caught on?**

Elizabeth Conroy, *NJ Schools Development Authority, Trenton, NJ*

**Using Triad at Multiple Sites to Enhance Data Representativeness**

Joe Fiacco, *Environmental Resources Management, Boston, MA*

**Programmatic Implementation of the Triad Approach within a State Reimbursement Program**

Nicholas Nigro, *Environmental Chemistry Consulting Services, Inc., Madison, WI*

**Session 11: Case Studies**

Moderator: Kira Lynch,  
*USEPA, Seattle, WA*

**Triad Case Study: Innovative High Resolution ERI Used in Real-time to Guide Soil Boring/Well Placement and Remediation; Elusive LNAPL Sources Located Rapidly at Lower Cost**

Stuart McDonald, *Aestus, LLC, Loveland, CO*

**A Triad Case Study: Finding an Unexpected Trichloroethylene Source Area**

Shane DeGross, *Sullivan International Group Inc., Orangevale, CA*

**Case Study: Triad Used to Conduct Indoor Air Assessments at Active Installations**

Sheri Moore, *USACE, Seattle, WA*

**Session 12: Dynamic Work Strategies**

Moderator: Deana Crumbling,  
*USEPA, Washington, DC*

**Real Time CSM Visualization and Feedback**

John Sohl, *Columbia Technologies, Baltimore, MD*

**Maximizing Use of Geological/Hydrogeological Data in Conceptual Site Model Development**

Jacqueline Burton, *Sundance Environmental and Energy Specialists, Ltd, Santa Fe, NM*

**Direct Sensing Probes, Collaborative Data Sets and Rapid CSM Advancement**

James Mack, *New Jersey Institute of Technology, Newark, NJ*



Abstracts for workshops and all platform presentations available at  
[www.umass.edu/tei/conferences/triad.html](http://www.umass.edu/tei/conferences/triad.html)

## 1:30 - 3:00 • Concurrent Afternoon Platform Sessions

**Session 13: Triad Implementation**

Moderator: Stuart Nagourney,  
*NJDEP, Trenton, NJ*

**Advancing Triad in New Jersey through Laboratory Certification**

Stuart nagourney, *New Jersey Department of Environmental Protection, Trenton, NJ*

**Improving Transparency in the Environmental Restoration Process**

Bradley Call, *USACE, Sacramento, CA*

**The Triad Decision Point – Efficiency, Value and Budget Control**

Arthur Bogen, Planner, *Valley Council of Governments, Derby, CT*

**Session 14: Case Studies**

Moderator: Kira Lynch, *USEPA, Seattle, WA*

**Using Triad Approach to Manage Uncertain Decisions for a Chlorinated Ethene Contaminated Site in Taiwan**

Cho Wan-Chi, *National Sun Yat-Sen University, Taiwan*

**Application of the Triad Approach to the Investigation of a Remote Facility: Driftwood Bay Radio Relay Station, Unalaska Island, Alaska**

Stephen Witzmann, *Jacobs Engineering, Anchorage, AK*

**Use of a Collaborative Dataset to Enhance Data Representativeness**

Louis Burkhardt, *Raytheon Company, Billerica, MA*

**Session 15: Dynamic Work Strategies**

Moderator: Deana Crumbling,  
*USEPA, Washington, DC*

**Case Study – Using Real-Time Field Measurements and Data Visualization for Efficient Site Assessment and Remedy Selection**

Stephen Boynton, *Subsurface Environmental Solutions, LLC, Andover, MA*

**Accept Nothing Less: Better Data Management for Better Decision Support and Lower Costs**

Matthew Mellon, *USEPA, Philadelphia, PA*

**Tools and Approaches for Managing Multi-Site, Multi-Year, Large-Volume Datasets in Order to Allow and Enhance Triad Implementation**

Regina Butler, *Portage Environmental, Cocoa Beach, FL*

## 3:30 - 5:00 • Concurrent Afternoon Platform Sessions

**Session 16: Triad Implementation**

Moderator: Stuart Nagourney,  
*NJDEP, Trenton, NJ*

**Creating a Decision Hierarchy and Heuristic Project Designs**

Robert Howe, *Tetra Tech EM Inc., Boulder, CO*

**The Triad Approach in Europe – Progress and Barriers**

Tim Hart, *Secretary of FASA, Cybersense Biosystems Limited, Abingdon, UK*

**Effective Funding Management Approaches for Triad Investigations**

Sharon Budney, *CDM, Edison, NJ*

**Session 17: Case Studies**

Moderator: Kira Lynch, *USEPA, Seattle, WA*

**Triad Case Study: Expedited VOC Source Area Investigation at Naval Base San Diego**

Karen Collins, *Richard Brady & Associates, San Diego, CA*

**Characterizing a Complex TCE Groundwater Plume, Eliminating Suspected Source Areas, and Reducing Investigation Costs for a RCRA RFI at Shaw AFB, SC**

Jonathan Shireman, *Shaw Environmental & Infrastructure, Inc., Knoxville, TN*

**Volatile Organic Compound Investigation in a Complex Glacial Flow System**

Seth Kellogg, *CDM, Edison, NJ*

**Session 18: Dynamic Work Strategies**

Moderator: Deana Crumbling,  
*USEPA, Washington, DC*

**A Strategy for Using Direct Push Technologies and a Geostatistical Adaptive Sampling Method for the Characterization of Former Manufactured Gas Plant Sites**

Bruce Kjartanson, *Lakehead University, Thunder Bay, Ontario*

**If you Think you Aren't Compositing at Your Site.....THINK AGAIN!**

Stephen Dymont, *USEPA, Washington DC*

**Minimizing Uncertainty in Triad Investigations Using Heuristic Sequential Sampling**

John Shafer, *Sundance Environmental and Energy Specialists, Ltd., Santa Fe, NM*

# Registration Form    on-line registration available at [www.teiconferences.com](http://www.teiconferences.com)

The registration fee for the conference is \$495 and includes conference program with abstracts, continental breakfast, breaks, and parking in the Campus Center parking garage. Lunch must be purchased separately.

Registrations will be confirmed by email.

**Registration Deadline: May 27, 2008.**

**Late fee:** a fee of \$75 will be added beginning May 28.

**Cancellation Deadline:** Cancellations made on or before **June 2<sup>nd</sup>** will be fully refunded minus a \$35 cancellation fee

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Department: \_\_\_\_\_

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E-Mail: \_\_\_\_\_

Enclose check for:

- Full three days (\$495)
- Full three days for sponsor additional attendee or Regulator (\$295)
- Tuesday (\$200)
- Wednesday (\$200)
- Thursday (\$200)
- Exhibitor Fee (\$900)
- Table Exhibit Fee (\$650)
- Triad Tool Room Fee (\$500/day) - Day preferred:    Wed    Thu
- Tuesday Hot Buffet Lunch (\$20)
- Wednesday Hot Buffet Lunch (\$20)
- Thursday Hot Buffet Lunch (\$20)
- CEUs and/or LSP/LEP Credits (\$50)
- Late Fee (\$75)

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For more information about conference contact Jane at 413-545-2842 or email [conferences@tei.umass.edu](mailto:conferences@tei.umass.edu).

For more information on registration and hotel options, contact Shelley at 413.545.2591 or [sgibbons@mail.aux.umass.edu](mailto:sgibbons@mail.aux.umass.edu)

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