Is the Triad Approach Really Something New?

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Does Triad introduce any
brand new ideas that no one has
ever thought of before?

No

Triad Builds on Prior Efforts

■ Efforts to promote data quality: EPA's DQO Process (since 1987)

■ EPA efforts to streamline projects:
  – Superfund Accelerated Cleanup Model (1992 & 1994)
  – RCRA Reforms (1996)
  – Expedited Site Assessment for UST sites (1997)
  – EPA's Dynamic Field Activities guidance (2003)

■ Efforts to promote dynamic work plans
  – DOE's Expedited Site Characterization (ESC) (1980s)
  – ITRC Accelerated Site Characterization (ASC) team (1997)
  – ASTM ESC guidance (1998)
  – ASTM ASC guidance for UST/petroleum sites (1998)
  – Argonne National Lab ASAP (1990s)
  – Tufts University & Region 1 (1990s)

1994 EPA Guidance to Accelerate CERCLA at Federal Facilities

- Cooperative decision-making offers flexibility
- Encourages innovative technologies & flexibility to support
- Condense phases and reports
- Look beyond PA/SI stage when gathering data
- Goal of data is to support "sound cleanup decisions"
- Balance uncertainty: develop contingent RODs
- Presumptive remedies help improve focus of data collection & limit evaluation of alternative actions
- Team approach (that includes stakeholders) encouraged
- http://www.epa.gov/swerffrr/documents/822memo.htm

1996 EPA RCRA ANPR
Recommendations Rolled into Triad

- Emphasize results over process
- Encourage public participation
- Set risk goals & clearly defined cleanup standards
  - ID action levels during planning stages of site investigations
- Early discussion about land use & its impact on decisions
- Use CSMs & existing information
- Use innovative technologies, including field technologies
- Tailor data collection to specific data use
- Integrate characterization w/ evaluating remedial options
- "Cost-effective" ≠ "least costly"
- http://www.epa.gov:80/fedrgstr/EPA-WASTE/1996/May/Day-01/pr-547.pdf

Triad is…

… a coordinated effort to integrate proven technical strategies into a framework that incorporates 25+ years of experience + advancing science & technology

with

the intent of improving the cost-effectiveness and confidence of project outcomes.

Does Triad represent a
way to manage characterization &
cleanup projects that is radically
different from what is commonly
and routinely done?

Yes

Every team undertaking a Triad project acknowledges
how different the process is from what they are used to

Triad is **NOT** exactly the same thing as expedited, accelerated, or streamlined site characterization!

(although many of the same concepts are part of Triad)

Triad is NOT limited to site characterization!

Triad is applicable to all phases of a project where you need to understand site contamination to make good decisions

Key distinguishing features of Triad

✴ Explicitly manage project *decision uncertainty*

- Triad expects site contamination to be *heterogeneous*

- Triad explicitly manages *sample support*

- Triad proactively builds *social capital*

None of the above are brand-new concepts, but integrating them into regulatory oversight & project implementation procedures is new!

These are lofty goals. How can they possibly be done cost-effective?

By planning for efficient field work that is performed (to the extent possible) in

REAL-TIME

(not a brand-new concept either)

How Does Triad Make Uncertainty Management Practical?

1) Project-specific Conceptual Models
   Mature CSM in real-time
   CSM distinguishes populations

2) A 2nd-Generation Data Quality Model
   Controls sampling variables
   Data representativeness explicitly grounded in decisions

3) Modern Tools & Work Strategies
   Real-time strategies around since 1980s
   Some tools "old," some brand new (Haloprobe, EAPS)

Although the ideas are not new, application of them is. The integrated package is NEW!

The purpose of the Triad approach is to bridge the disconnect between

"what is routinely done"
(based on 1980's knowledge & technology)
&

"what is now possible"
(synthesized from the experiences of leading
practitioners dedicated to modernizing their craft)

2nd-Generation Practices

Easy to Get Stuck in 1st Generation Practices

Reality

1982

Perceived reality

1st-Gen. Institutional Procedures & Guidance

Experience & investment in R&D produce
- Better technology tools
- More experience
- More complete knowledge
- Better models

Practice Based on Sound Science

Inertia, Lagging Practices

Present

Disconnect
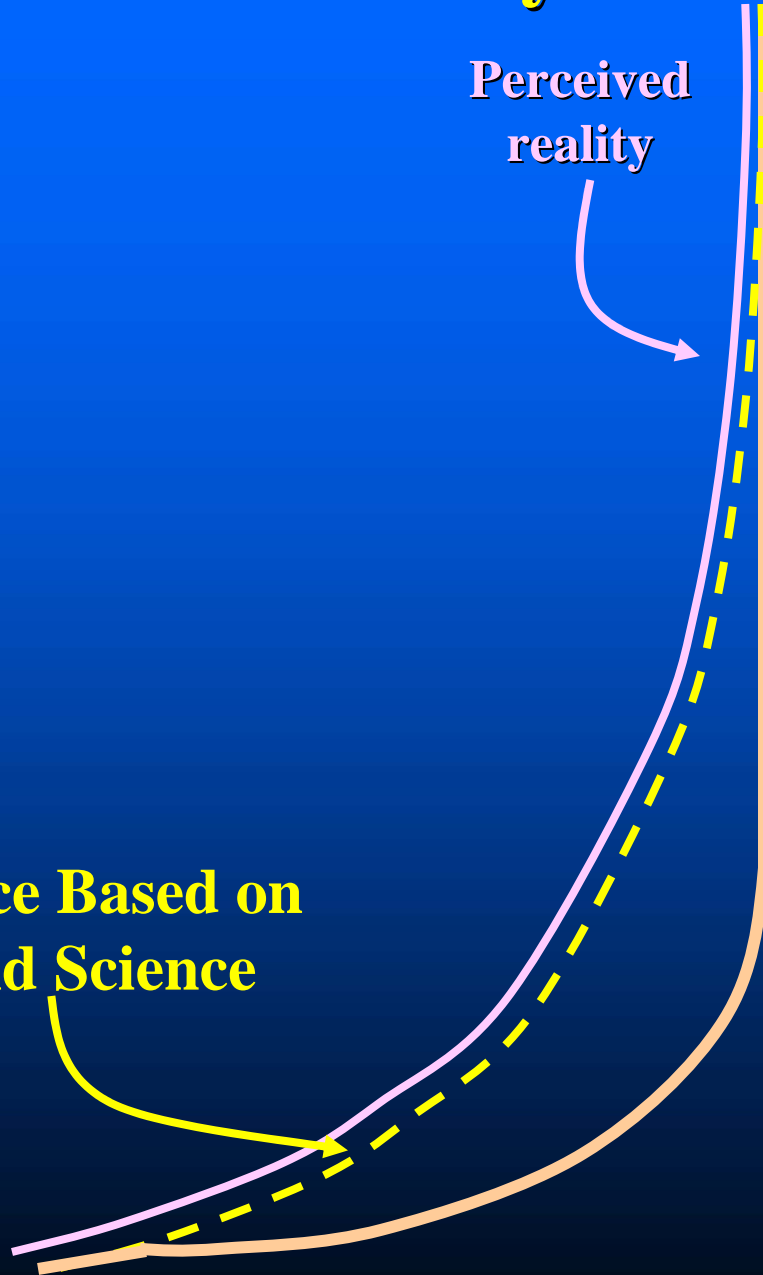
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Triad as a Catalyst to Modernize Practices

Reality

Perceived reality

Institutionalized Procedures, Program Guidance

Practice Based on Sound Science

Triad initiative attempts a realignment through a controlled, gradual transition

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Triad is NOT…

- …written in all caps (not an acronym!)

- …just about using field analytical! (Warning: Just using field analysis does not mean they used the Triad approach!!)

- …a way to justify using field analysis without using proper QC (MUST have data of known/documented quality!)

- …just about using a dynamic/flexible work plan (must actively manage decision uncertainty!)

- …taking 10 zillion samples (use your head & your CSM to increase samples as needed to manage uncertainty!)

- …a license to write vague work plans or escape regulatory oversight or accountability.

Summary: How Is Triad New?

Triad is a fully <u>integrated</u> process for <u>planning</u> & <u>implementing</u> projects;
Based on managing <u>all</u> sources of <u>decision</u> uncertainty (especially heterogeneity)

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Triad built from practitioner experience !!

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Triad being used as a platform to coordinate broad efforts to modernize the site cleanup paradigm.

The Challenge for
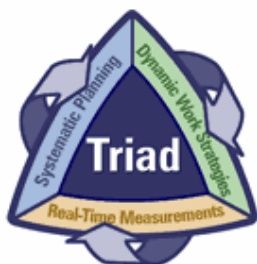# Next-Generation Thinking

"The difficulty lies, not in the new ideas, but in escaping the old ones..."

—John Maynard Keynes
(English economist, 1883-1946)

Triad Resource Center
(available, but still in development)

- Triad Resource Center website will be THE repository for Triad-related material, including:
  - Case studies
  - Frequently Asked Questions
  - Glossary of Triad terminology
  - http://www.triadcentral.org

Glossary [   ] Go   Search Site [   ] Go

| Triad Overview | Triad Management | Regulatory Information | Technical Components | User Experiences | Reference/Resources |

Triad Resource Center
TRIAD: A SMARTER SOLUTION TO SITE CLEANUP

The Triad is an innovative approach to decision-making for hazardous waste site characterization and remediation. The Triad approach proactively exploits new characterization and treatment tools, using work strategies developed by innovative and successful site professionals. The Triad Resource Center provides the information hazardous waste site managers and cleanup practitioners need to implement the Triad effectively.

Privacy/Security

News
▷ Northeast Waste Management Officials' Association (NEWMOA) promotes Triad

"The NJDEP supports and encourages the use of the Triad for sites undergoing investigation and remediation within the Site Remediation and Waste Management Program where feasible."

Evan Van Hook
New Jersey Department of Environmental Protection
Assistant Commissioner for Site Remediation and Waste Management

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? Frequently Asked Questions

▷ **Triad Overview**
Introduction to Triad key concepts, guiding principles, and benefits

▷ **Triad Management**
Triad vs. traditional, cost estimation, procurement, QA/QC, logistics and implementation, and other management concerns

▷ **Regulatory Information**
Legal defensibility, relationship to DQO process, QA/QC, and other regulatory issues

▷ **Technical Components**
Triad and cleanup programs, systematic planning, dynamic work plans, real-time measurements, and other technical information

▷ **User Experiences**
Triad projects map, case studies, and lessons learned

▷ **References/Resources**
Triad documents, web links, training classes, and resource providers

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