

# The United States Army Corps of Engineers Hazardous and Toxic Waste Program

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## Presentation

- What is the Army Corps of Engineers?
- A brief history of environmental action at US Military Bases
- Organization of USACE environmental program
- USACE environmental program implementation

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## US Army Corps of Engineers

- Known as “USACE”
- Founded in 1779
- Current Staff worldwide is 35,000
  - 8 Divisions, 41 Districts worldwide
- Environmental staff worldwide 8,000
- USACE Environmental Mission
  - 1924 Oil Pollution Discharge Act
  - 1958 Water Supply Act
  - 1972 Federal Water Pollution Control Act



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## Environmental Actions at US Military Installations 196? - 1989

- Installations focused on resolving immediate problem
- Wide difference in costs and approach in similar situations
- In 1989 USACE identified a need for better and more organized approach
  - Training of people working on Environmental Projects
  - Use of specialists (Centers of Experts)
  - Incorporate lessons learned and new technologies when appropriate



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## USACE Environmental Program Implementation

- Districts execute projects at the request of installations
  - Train appropriate staff
  - Utilize standard practices
- Divisions provide quality assurance oversight of district
- Center of Expertise provides review and assistance in project planning and technology selection
- Laboratories
  - Investigate new technologies, measurement, and approaches

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## Getting it Right the First Time

### Technical Project Planning and Execution

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## USACE Guidance

- Engineer Regulations
  - Things we must do
- Engineer Manuals
  - How do we do it
  - Monitoring Well Construction, Preparation of Sampling and Analysis Plans, Chemical Data Quality Management, Risk Assessment, Site Health and Safety

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## Engineer Regulation Requirements

- Chemical Data Quality Management (CDQM)
- Technical Project Planning Culminating in Project-Specific Data Quality Objectives
- Use of Analytical Service Providers Compliant with ISO/IEC Guide 25
- Documentation in Accordance with ANSI/ASQC E4



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# CDQM Strategy

- Application of Existing Guidance
  - EM 200-1-1 Laboratory Validation
  - EM 200-1-2 Technical Project Planning
  - EM 200-1-3 Sampling and Analysis Plans
  - EM 200-1-6 Chemical Quality Assurance for HTRW Projects



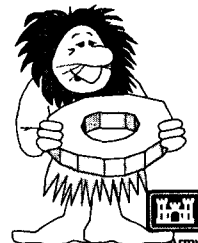
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# Technical Project Planning (TPP)

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- Multi-Disciplinary Approach
- Focus on “Site Closeout”
- Promotes Documentation
- Data Quality Objectives (DQOs)



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## Technical Planning Team

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- Decision Makers
  - Customer, Project Manager, Regulator(s), and Other Stakeholders
- Data User Perspectives
  - Risk, Compliance, Remedy, Responsibility
- Data Implementor Perspectives
  - Sampling and Analysis



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## TPP Process

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- Phase I Identify Current Project
  - Phase II Determine Data Needs
  - Phase III Develop Data Collection Options
  - Phase IV Design Data Collection Program
- Arrows indicate the flow: Phase I to II (down), Phase II to III (down), Phase III to IV (down). There is also an upward arrow from Phase III to Phase II, suggesting a feedback loop.



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## Detailed DQO Preparation...

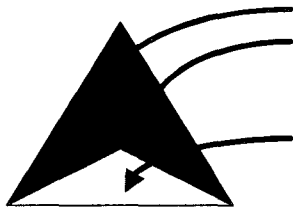
- Prepare a DQO for Each Component
- Compile Information to Prepare Detailed DQOs

### Data Needs Worksheets

- Data Need
- Intended Data Use(s)

### Data Collection Program Table

- Means
- Uncertainty



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## Field Sampling Oversight

- Necessity and Frequency Addressed by Technical Team During Project Planning
- Field Errors Most Common Source of Error
- Feedback and Corrective Action
- Field Oversight Checklists

- Chapter 6 Field Sampling Oversight On HTRW Projects



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## Field Oversight Checklists

- General Procedures
- Groundwater Sampling
- Soil and Sediment Sampling
- Surface Water Sampling
- Waste Sampling
- Storm Water Sampling
- Air Sampling
- Potable Water Sampling



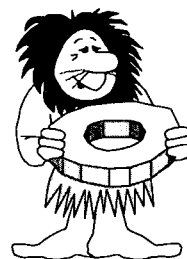
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## Chemical Data Compliance Monitoring Activities

- Validation of Primary and QA Labs\*
- Technical Document Review\*
- Sample Handling Quality Assurance\*
- QA Sample Collection and Analysis\*
- Chemical Quality Assurance Report\*
- Chemical Data Quality Assessment Report\*



- \* Primary CDQM Activities

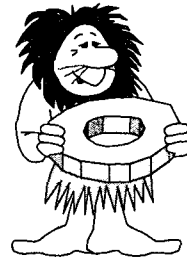
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## Compliance Monitoring Activities (cont)

- Single or Double Blind PE Samples
- Review of Primary Lab Data
- Validation of Data
- Field Audits
- Laboratory Audits
- Tape Audits



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## Elements of a CDQAR

- Description of Project Background & Purpose
- Summary of DQOs
- Summary of Sampling Activities
- Description of Deficiencies in Sampling/  
Packaging/Transportation/Storage/Analysis
- Restrictions on Use of Data
- Statement of Contract Compliance or Noncompliance
- Data Adequacy
- Lessons Learned
- Corrective Actions Taken
- Chapter 5: Chemical Data Quality Assessment Reports



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# The Importance of Chemistry

Million Dollar Decisions are  
sometimes based on Ten Dollar Tests

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## Chemistry

- Chemistry is the reason for the project!
  - Chemical contaminants are a risk or nuisance
- Many action levels are close to the instrument detection limits
  - “False Positives” need to be avoided
    - Lab reports presence but the compound not really there
  - Data customer needs to be sure of **ACCURACY** near the action level
  - Samples need to be **REPRESENTATIVE** of the field conditions for sound engineering decisions to be made

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# Limitations of Environmental Analyses

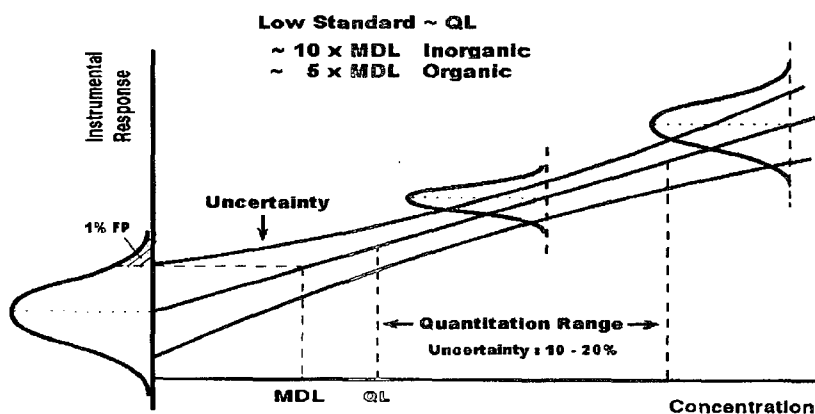
- Small number of samples.
- Large number of target analytes.
- Complex, heterogeneous sample matrices.
- Limited method performance data.
- Data quality is only qualitatively assessed.



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# Uncertainty



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## Proficiency Testing

- Use real-world, blind performance evaluation (PE) samples to verify performance.
- Double-blind PE samples are preferred to single-blind PE samples.
- Alternative - Use split samples to compare results by two labs.

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## Summary

- USACE has developed guidance, training, procedures and and support to ensure that hazardous and toxic waste sites are assessed and remediated appropriately

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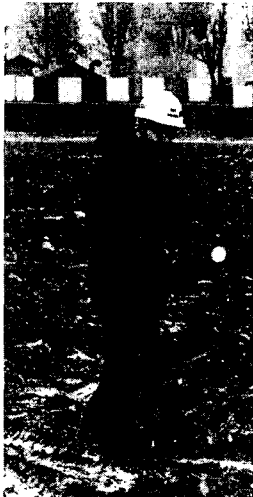
## Environmental Websites

- <http://www.environmental.usace.army.mil/>
- <http://www.usace.army.mil/inet/usace-docs/eng-manuals/em.htm>
- <http://www.afcee.brooks.af.mil/afceehome.asp>

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## Thanks



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