

<p>CEMP-RA Engineer Regulation 200-1-1</p>	<p>Department of the Army U.S. Army Corps of Engineers Washington, DC 20314-1000</p>	<p>ER 200-1-1 30 May 2000</p>
	<p>Environmental Quality  POLICY AND GENERAL REQUIREMENTS FOR THE ENVIRONMENTAL INNOVATIVE TECHNOLOGY PROGRAM</p>	
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CEMP-RA

Regulation  
NO. 200-1-1

30 May 2000

Environmental Quality  
POLICY AND GENERAL REQUIREMENTS FOR  
THE ENVIRONMENTAL INNOVATIVE TECHNOLOGY PROGRAM

1. Purpose. This regulation provides specific policy and guidance for the development, implementation, and documentation of the Innovative Technology Program to foster the successful transfer of new and innovative environmental technologies to U.S. Army Corps of Engineers (USACE) projects.
2. Applicability. This regulation is applicable to all Headquarters, U.S. Army Corps of Engineers (HQUSACE) elements, and all USACE commands executing projects assigned to USACE.
3. Distribution. Approved for public release; distribution is unlimited
4. References. See Appendix A.
5. Definitions. See Appendix B.
6. Policy. It is the policy of the USACE to use innovative technologies to reduce costs, expedite project schedules, minimize risk and maximize effectiveness during all phases of a project. This regulation emphasizes the transition of promising technology developments into tomorrow's operational capabilities. The consideration and use of innovative technologies shall be supportive of the USACE Program and Project Management Business Process (PMBP) as described in ER 5-1-11, Program and Project Management.
7. Discussion.
  - a. General. This regulation is to provide policy and guidance on the consideration, implementation, use, and documentation of innovative technologies for all USACE projects

during all phases of the project including planning, engineering, construction, and operation and maintenance, long-term monitoring and site close-out.

b. A significant effort to further the use of innovative technology is to encourage gathering cost and performance data from site investigation, monitoring and/or full-scale remediation projects. This data increases the amount of information on environmental innovative technologies allowing environmental professionals to make more informed decisions on the selection of technologies for environmental restoration activities. See Appendix C for an expanded discussion on Cost and Performance Data Gathering.

c. Other focused elements for consideration include the following:

(1) Develop and implement criteria by which technology deployment efforts can be prioritized and successes can be measured.

(2) Collect, assess and document previous and current efforts to develop and apply technologies using criteria mentioned above.

(3) When appropriate, use peer review in the selection, evaluation and prioritizing of innovative technology projects.

(4) Improve system of information gathering, sharing and documentation on innovative technologies that are available or under development by other organizations within the United States and abroad.

## 8. Responsibilities.

a. General. Coordination and teamwork are required for successful implementation of this regulation. HQUSACE will determine policy, the Divisions will provide support for the Headquarters, the Districts and Centers of Expertise will provide support and implementation, and the Laboratories will provide expertise on an as-needed basis.

b. HQUSACE is the proponent for the Innovative Technology Program and will provide policy and funding for the program. Also, HQUSACE will identify technology transfer programs and initiatives that increase awareness of innovative technologies within USACE and will designate an Innovative Technology Advocate (ITA) to coordinate and provide oversight.

c. The Divisions are responsible for ensuring that the implementation of the Innovative Technology Program is included in their oversight role of funded environmental projects conducted within their respective boundaries.

d. The Districts and Ordnance and Explosive (OE) Design Centers are responsible for following USACE policy. Each District and OE Design Center shall identify an ITA and develop a Standard Operating Procedure to comply with the policy set forth in this ER. The ITA will implement HQUSACE policy and Centers of Expertise (CX) recommendations as appropriate to facilitate the use of innovative technologies. (See Appendix D for a further discussion of responsibilities.)


e. The CXs for Hazardous, Toxic, and Radioactive Waste (HTRW) and for Ordnance and Explosives (OE) will serve as program managers, responsible for providing support to HQUSACE in implementing this Regulation and the Innovative Technology Program. Technology transfer which is an integral part of this regulation will be provided by the CX. (See Appendix E for a further discussion of responsibilities.)

f. USACE Engineer Research and Development Center (ERDC) laboratories are encouraged to identify, develop, use, and disseminate information on innovative technologies and methods and to provide expertise on a project or technology basis. USACE ERDC supports the environmental missions through research, development, special studies and technology transfer. Environmental Laboratory research includes a network of expertise and facilities from other ERDC and Corps laboratories, other government agencies, academia and the private sector. USACE laboratories foster the transfer and use of products from R&D programs to Department of Defense, Federal agencies, state and local government and private enterprise.

9. Division Quality Assurance Review Process. The CX will provide support to the Divisions in performing periodic reviews of District implementation of innovative technology to determine how well this policy is being followed. These reviews shall be performed on a biennial basis. The CX will document findings, recommendations and success stories to support USACE innovative technology efforts.

FOR THE COMMANDER:

- 5 Appendices
- App A – References
- App B – Definitions
- App C – Cost and Performance  
Data Gathering
- App D – Districts and OE Design Centers
- App E – Centers of Expertise

  
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**APPENDIX A  
REFERENCES**

Public Law (PL) 96-510, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by PL 99-499, the Superfund Amendments and Reauthorization Act of 1986.

PL 94-580, Resource Conservation and Recovery Act (RCRA) of 1976 as amended by PL 98-616, the Hazardous and Solid Waste Amendments of 1984.

15 USC 3701, et seq. Stevenson-Wydler Technology Innovation Act of 1980.

Title 40, Section 300.430(e) Code of Federal Regulations, "Feasibility Study Requirements".

Executive Order 12591, Facilitating Access to Science and Technology.

EPA 542-B-98-007, Guide to Documenting and Managing Cost and Performance Information for Remediation Projects, Revised Version, October, 1998.

DOD Instruction 4715.7, Environmental Restoration Program, April 22, 1996.

DOD Instruction 4715.7, Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Within the United States.

DOD Regulation 3200.12-R-4, Domestic Technology Transfer Program.

Army Regulation 70-57, Research, Development and Acquisition, Military-Civilian Technology Transfer.

ER 5-1-11, Program and Project Management.

ER 37-345-10, Accounting and Reporting - Military Activities.

ER 70-1-5, Research and Development - Corps of Engineers Research and Development Program.

ER 415-1-16, Fiscal Management.

ER 385-1-92, Safety and Occupational Health Document Requirements for Hazardous, Toxic and Radiological Waste (HTRW) Activities and Ordnance and Explosive Waste (OEW).

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ER 1110-1-2, Engineering and Design Quality Management.

ER 1110-1-1300, Cost Engineering Policy and General Requirements.

ER 1110-1-8158, Corps-Wide Centers of Expertise Program.

ER 1110-2-1302, Civil Works Cost Engineering.

ER 1110-3-1300, Military Programs Cost Engineering.

ER 1165-2-132, Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects.

EP 1110-1-19, Technical Requirements for Specifications to Report HTRW Environmental Restoration Cost and Performance.

EM 200-1-2, Technical Project Planning (TPP) Process.

EI 01D010, Engineering Instruction, Construction Cost Estimates.

CEMP-RT Memorandum, dated 24 July 1996, subject Technical Roles and Responsibilities for the USACE HTRW Program.

CEEC-EB Memorandum, dated 22 June 1998, subject Hazardous Toxic Waste (HTW) Programs - Innovative Technology Advocate (ITA).

CEMP-RT Memorandum, dated 27 February 1991, subject Requirement to Consider Innovative Technology in Scopes of Work for Hazardous and Toxic Waste Program (HTW).

CEMP-RT Memorandum, dated 16 December 1998, subject Requirement to Consider Innovative/Alternative Technologies in Scopes of Work for USACE Hazardous, Toxic and Radioactive Waste Program (HTRW).

ANSI/ASQC E-4-1994, Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs.

## **APPENDIX B DEFINITIONS**

Innovative Technology: 1) A technology which is significantly better, cheaper, or faster than existing technologies, that is not broadly applied due to limited knowledge or established standards within the engineering community. 2) A technology that is not commercially available from one or more vendors which has the potential to be better, cheaper, or faster than existing technologies. This may include technologies that are currently under development that have not been tested or evaluated on a full-scale project. 3) A technology that lacks full scale cost and performance data.

Technology Implementation: A process that includes stakeholder awareness, information dissemination, development of standard procedures and protocols, development of cost and performance reports, and other actions that encourage technology users to evaluate, procure, install, monitor, and operate previously unused or underutilized technologies.

## **APPENDIX C GATHERING COST AND PERFORMANCE DATA**

To increase the benefit and value of the data and experience gained from the use of innovative technologies in site investigations and/or full-scale cleanups, it is strongly recommended that these efforts be documented in Remediation/Removal Case Studies, Cost and Performance Reports, Site-Specific Removal Reports, Remedial Action Completion Reports and Construction Completion Reports. These documents are to be used to support site close out, broaden the utility of the information, increase confidence in the future effectiveness of site investigations/remedial/removal technologies, and improve future design and construction processes. Cost and Performance Reports should contain project-specific information and data that provides a feedback mechanism from completed projects to future projects -- via a cost-benefit analysis, cost effectiveness, life-cycle cost comparisons or technology performance and value engineering. Documenting cost and performance also:

- a. Establishes a baseline for future data gathering and report preparation;
- b. Assists in remedy selection by allowing the consideration of previous technology/project applications on sites with similar characteristics;
- c. Provides a more meaningful comparison of technology performance, including assessments of potential presumptive remedies, by providing consistent reporting of site characteristics and operating conditions;
- d. Supports improved cost comparisons and projections; and
- e. Ensures a minimum level of reporting quality by specifying documentation objectives for test and measurement procedures.



## **APPENDIX D DISTRICTS AND OE DESIGN CENTERS**

In the Districts, Innovative Technology Advocates (ITA) will implement the Headquarters, U.S. Army Corps of Engineers (HQUSACE)/Hazardous, Toxic, and Radioactive Waste (HTRW) policies and the Ordnance and Explosives (OE) Center of Expertise (CX) recommendations as appropriate to facilitate the use of innovative technologies and methods. As the primary implementers of innovative technologies, U.S. Army Corps of Engineers (USACE) Divisions and Districts, and OE Design Centers are encouraged to provide specific input regarding HTRW/OE project requirements that could use innovative technologies and methods to reduce costs and expedite project execution. District and OE Design Center personnel are encouraged to work together wherever feasible in performing site investigations and/or site remediation. District/OE Design Center Project Managers (PM) shall include ITA on their project teams. District ITA shall contribute to USACE-wide innovative technology efforts.

a. District/OE Design Center ITA should facilitate the use of new and innovative environmental technologies in an effort that begins at the start of HTRW/OE projects and ends at site closure. ITA should coordinate with PM and other appropriate personnel early in the project planning phase. Early into the project, ITA should identify if customers are receptive to innovative technology alternatives, how funding is implemented, acquisition planning, contracting mechanism, and regulator approval requirements. District ITA shall facilitate the elements of technology transfer in contract statement of works within their organization. District ITA shall assist in drafting implementation contracts to ensure that innovative environmental technologies are considered in the Investigation, Feasibility Study, proposed plan, and Record of Decision for remedial action. ITA shall assist in selection of remediation contractors to ensure that the selected contractor possesses the qualifications, capability and skills to effectively employ innovative environmental technologies.

b. The District/OE Design Center ITA have an important role in determining the use of innovative technologies in HTRW/OE projects assigned to USACE. The PM shall consult with the District/OE Design Center ITA to determine project specific level of ITA participation. The District/OE Design Center ITA shall coordinate with the HTRW/OE PM for representation on the HTRW/OE project team from project inception to completion. The role of the District/OE Design Center ITA includes Quality Control, Quality Assurance, Technical Assistance, and review of innovative technology recommendations. The District/OE Design Center ITA have a responsibility to provide, outreach, education, and information sharing on innovative technology for USACE personnel and customers.

## **APPENDIX E CENTERS OF EXPERTISE**

Technology transfer is an integral part of USACE operations and involves active participation of all USACE entities to assure the products of the Innovative Technology Program are usable, timely, and appropriate. Each Innovative Technology Advocate (ITA) element is responsible for consistent transfer of products and information primarily to the USACE field offices and secondarily to other agencies and the private sector. The Centers of Expertise (CX) for Hazardous, Toxic, and Radioactive Wastes (HTRW) and Ordnance and Explosives (OE) serve as program managers to support to Headquarters, U.S. Army Corps of Engineers (HQUSACE) in implementation of the Innovative Technology Program. In consultation with the HQUSACE ITA, the Divisions, and District ITAs, the HTRW and OE CX ITAs develop an annual technology transfer plan to provide a general direction and approach for technology transfer in the ITA program. Implementing mechanisms include training courses such as PROSPECT, technical revisions to Engineer Circulars, Engineer Manuals and Engineer Technical Letters, technical input to new or revised Engineer Guide Specifications, and development of technical and procedural guidance necessary for effective implementation of Engineering Regulations and other USACE policy documents.

a. The HTRW CX ITA(s) distribute funding, coordinate meetings, maintain meeting records, encourage and support other technology programs, provide upward reporting, assess projects for lessons learned and success stories, coordinate technology transfer throughout USACE, and assure the implementation of policies and recommendations developed by the HQUSACE ITA. The HTRW CX ITA provide technical assistance and review on any HTRW project upon request from a district, division, or HQUSACE regarding HTRW innovative technologies. HTRW CX ITA shall keep abreast on the latest innovative environmental technologies through contact with colleagues at workshops, symposia and conferences to disseminate to USACE organizational elements.

b. The OE CX ITA define and evaluate current technology and functional requirements, provide consulting services to projects, identify technology gaps, provide seed money to field improved technologies, encourage and support other technology programs, assess projects for lessons learned, and assure the implementation of policies and recommendations developed by the HQUSACE ITA. OE CX ITA interface between the OE project teams and the research and development organizations involved in OE technology. OE CX ITA coordinate technology transfer to the user and recommend changes incorporating technology improvements to EE/CA and removal contracts, as appropriate. The OE CX ITA provide technical assistance and review on any OE project upon request from the design center, district, divisions, or Headquarters regarding OE innovative technologies.