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# What are the Corps' HTRW Technical Assistance Capabilities?

The Corps is involved in all aspects of HTRW management. The HTRW design districts provide expertise in:

- ! environmental technical design,
- ! contracting and procurement,
- ! technical liaison and program management,
- ! project management,
- ! chemistry,
- ! geotechnical engineering and geology,
- ! health and safety,
- ! cost engineering,
- ! value engineering,
- ! environmental law,
- ! risk assessment,
- ! industrial hygiene, and
- ! provide technical assistance to the geographical district, when requested.

In addition to the types of experts mentioned above, the HTRW MCX staff also includes experts in:

- ! environmental regulations,
- ! chemical data quality management,
- ! chemical/process engineering,
- ! innovative technologies, and
- ! environmental engineering.

The HTRW Design Districts are capable of:

- ! conducting remediation investigations to determining the extent of contamination,
- ! assessing degree of risks posed by chemical contamination,
- ! determining applicable regulatory requirements,
- ! assessing health and safety needs,
- ! conducting feasibility studies, and developing remedial action designs.

The HTRW MCX is capable of:

- ! providing technical review of investigation and remedial design projects,
- ! conducting compliance inspections,
- ! developing/instructing classroom and field training relative to hazardous and toxic waste restoration/management, and
- ! providing technical assistance to the field in all HTRW related disciplines.

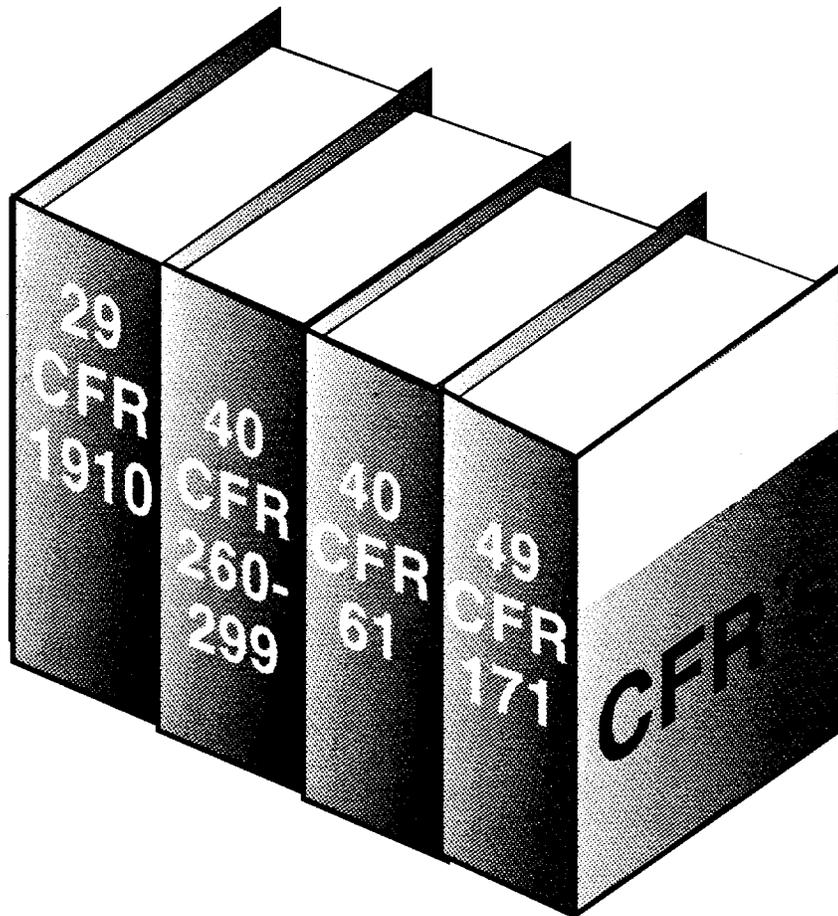
Military Construction Districts are capable of:

- ! responding to releases,
- ! providing technical support and conducting biddability, constructability and operability (BCO) reviews during the design phase of the projects, and
- ! executing construction of remedial action projects.

## Regulatory Assistance Capabilities

In the complex world of environmental laws and regulations, it is important to establish early on the appropriate regulatory criteria which apply when conducting compliance evaluations or response actions. Not only is there a number of Federal laws such as CERCLA, RCRA, TSCA, SDWA, CWA, CAA, HMTA, etc. which may govern activities, but there may also be more stringent state and local requirements. The Corps Regulatory Specialists/Environmental Engineers in coordination with Corps Counsel:

- ! track regulatory changes as they occur;
- ! provide technical assistance to districts, divisions, and other customers upon request;
- ! review upon request environmental documentation, work plans, reports, permit applications, etc. for technical adequacy;
- ! conduct classes/seminars on regulatory requirements;
- ! develop guidance documents/fact sheets on regulatory issues;
- ! act as technical proponent for courses relative to environmental regulations; and
- ! assist in compliance evaluations.



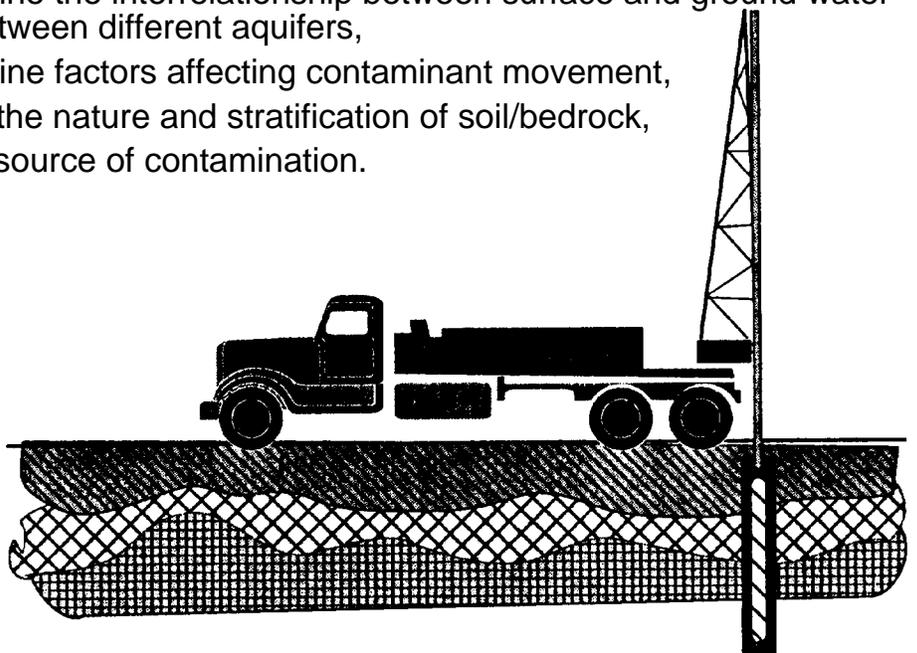
## Geotechnical Capabilities

Geotechnical staff include both geologists and geotechnical engineers experienced in:

- ! ground water modeling,
- ! soil vapor extraction,
- ! geophysics,
- ! landfill covers and liners,
- ! slurry walls,
- ! solidification/stabilization,
- ! slope stability,
- ! soil/rock strengthening,
- ! tunneling,
- ! geotechnical testing,
- ! monitoring well installation,
- ! dredging,
- ! forensic geology,
- ! underground storage tanks,
- ! ground water extraction, and
- ! geosynthetics.

Geotechnical capabilities are utilized to:

- ! define lateral and vertical extent of contamination,
- ! determine depth to ground water,
- ! define aquifers present at the site,
- ! define rate and direction of ground water movement,
- ! predict plume movement,
- ! determine the interrelationship between surface and ground water and between different aquifers,
- ! determine factors affecting contaminant movement,
- ! define the nature and stratification of soil/bedrock,
- ! locate source of contamination.



## **Risk Assessment Capabilities**

Fundamental in establishing priorities and degree of response action required in the environmental restoration process, is protection of human health and the environment. As a division/district commander, you have a responsibility for ensuring that projects executed include adequate risk evaluation and mitigation. Corps technical staff can support you in this effort.

The process of evaluating human health risks is initiated at project conception and is carried through the entire process. There are four interactive elements:

- ! data collection and evaluation,
- ! exposure assessment,
- ! toxicity assessment, and
- ! risk characterization.

The primary objectives of the risk assessment are to:

- ! determine whether health risks exist at a site which warrant time-critical removal actions;
- ! determine quantitatively, in absence of remediation, the degree of risk to area populations from potential exposure to contamination under current and future site conditions;
- ! provide a basis for determining levels of chemicals that can remain on site and still be adequately protective of public health and the environment;
- ! provide a basis for comparing potential health impacts of various remedial alternatives; and
- ! provide a basis for evaluation of health impacts associated with design and remediation.

The risk assessment is also used to:

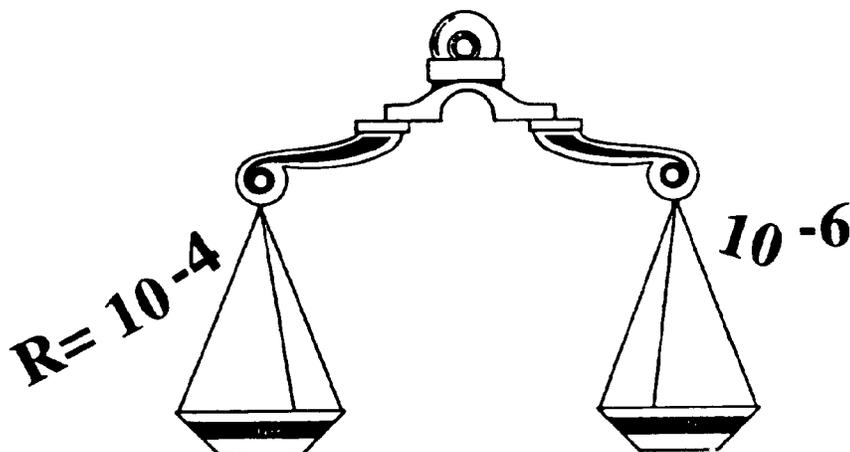
- ! aid in project prioritization;
- ! establish criteria to support a "no further action required" determination;
- ! to provide the basis for planning follow-on remedial investigation if required; and
- ! to assist in risk communication to the public.

The conclusions of the risk assessment process are used as the basis for establishing the extent residuals may be left in place and still provide adequate protection to human health and the environment.

The HTRW MCX provides technical support to HTRW districts for risk assessment review and guidance of all USACE HTRW projects. The MCX can provide support in evaluating risk assessments, as well as updating districts with applicable publications and regulatory criteria.

The Army Environmental Hygiene Agency under AR 200-1 is the Surgeon General's representative for evaluating risk assessments and for providing recommendations for approval of Army IRP and FUDS projects. Commanders should ensure that in addition to district technical staff review, AEHA is provided the opportunity to review Army IRP and FUDS risk assessments in accordance with AR 200-1 and DA PAM 40-578. AEHA provides support services for Federal Facility Agreement negotiations and for performing risk assessments for Army IRP and FUDS projects.

The OEW MCX provides technical support for OEW risk assessments. If OEW is discovered, the responsible district must contact the OEW MCX as soon as practicable and assign a Risk Assessment Code (RAC) to the site. RACs are based on factors such as type, location, and quantity of ordnance involved and are assigned on a scale from 1 to 5. Sites posing imminent hazards and requiring emergency action are assigned RAC 1. Sites requiring mitigation and warranting feasibility studies are assigned RAC 2. Sites requiring confirmation studies to be performed to determine potential threats are assigned RACs 3 and 4 (3 being of higher priority than 4). RAC 5 is assigned to sites which require no action.

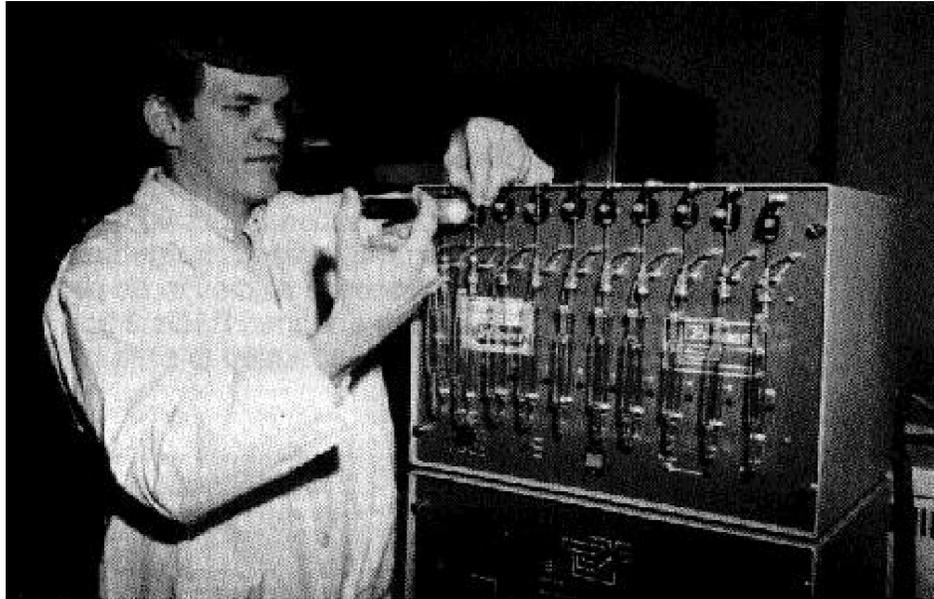


### **Chemical Data Quality Management (CDQM) Program**

The Chemical Data Quality Management Program illustrates another important technical capability of USACE. This program ensures that the type, quantity, and quality of analytical data collected meet all data quality objectives (DQOs) for the project. The DQO approach is used to organize key planning issues in a thoughtful sequence to ensure that the work effort will produce the type and amount of data required to determine the next course of action. The Chemical Data Acquisition Plan (CDAP), prepared by the contractor, is the primary planning document used to determine DQOs.

As part of the CDQM program, prior to performing project specific analysis, all contract laboratories are required to demonstrate analytical competency. This is accomplished through a detailed evaluation of the laboratories technical capabilities also referred to as the "lab validation process". To become validated, contractor laboratories must:

- ! Submit a Laboratory Quality Management Manual (LQMM) or an equivalent quality assurance plan consistent with USACE and USEPA policies and requirements;
- ! Successfully analyze performance audit samples; and
- ! Undergo an onsite laboratory inspection of instrumentation, personnel, SOP implementation, and overall performance.



As an additional performance measure, Quality Control (QC) and Quality Assurance (QA) samples are analyzed during project execution. QC samples which may include duplicates (split samples), rinsates, trip blanks, and/or background (upgradient) sample are collected and analyzed at the contractor's laboratory. This allows field originated checks on sampling, decontamination, and shipping procedures. As a QA measure, field samples are collected in replicate and shipped to the designated USACE QA laboratory for analysis. Comparisons can then be made between the data obtained by the contract laboratory and the government lab. Concurrent analysis by an external lab also assists in indicating if contaminants have been introduced into the sample at the laboratory.

A detailed evaluation of the contractor's data quality is presented in the Chemical Quality Assurance Report (CQAR) prepared by the USACE QA laboratory for the district project manager. This report evaluates the contractor's data and defines any problems noted. Issues discussed include agreement between duplicates; acceptability of internal quality control procedures (differences in % recoveries); shipping, preservation, or custody errors; holding times. A tabular presentation of the QA laboratory and contractors data is appended to the CQAR to show specific data discrepancies.

Validation procedures will differ depending upon the eventual use of the data. For example, data to be used as a screening tool will not undergo the rigorous validation procedures and scrutiny given to data intended to be used for contaminant confirmation.

## USACE CDQM Roles/Responsibilities:

HQUSACE is responsible for CDQM by formulating policy, program management, mandating technical guidance development and dissemination, and evaluation of the USACE division and district conduct of CDQM and adherence to ER 1110-1-263.

The HTRW-MCX, under the direction of HQUSACE, performs general oversight of USACE HTRW design districts, division laboratories CDQM execution. This includes validation of all contract and USACE division laboratories, development of technical guidance, standard operating procedures (SOPs), and training courses, review of project documents, and general technical assistance to USACE divisions/districts.

USACE Division Laboratories perform and coordinate various CDQM activities for HTRW projects. These include document review, technical support, analysis of QA samples, and generation of the Chemical Quality Assurance Report (CQAR). USACE assigns a QA (division) laboratory for each project.

USACE Design Districts are assigned the responsibilities for coordinating, reviewing, and completing plans, and execution or oversight of site activities for HTRW projects.

More detailed information on the CDQM Program organization and implementation is available in ER 1110-1-263, Chemical Data Quality Management for Hazardous Waste Remedial Activities, (1 Oct 90)

## Health and Safety

One of the most important considerations throughout all aspects of HTRW activities is protection of site workers and the surrounding community during site investigation and remediation. Accordingly, health and safety expertise is maintained throughout USACE to ensure adequate thought is put into health and safety prior to the start of site activities.

- ! Headquarters USACE has ultimate responsibility for the overall program.
- ! HTRW Design Districts who execute HTRW investigation, predesign and design related activities are responsible for developing all appropriate engineering related health and safety documents required by USACE and OSHA regulations.
- ! The HTRW MCX is responsible for conducting mandatory reviews of design related Health and Safety documents prepared by in-house HTRW Design Districts.
- ! The Huntsville Division, CEHND, serves as health and safety technical experts for ordnance and explosive waste related projects.

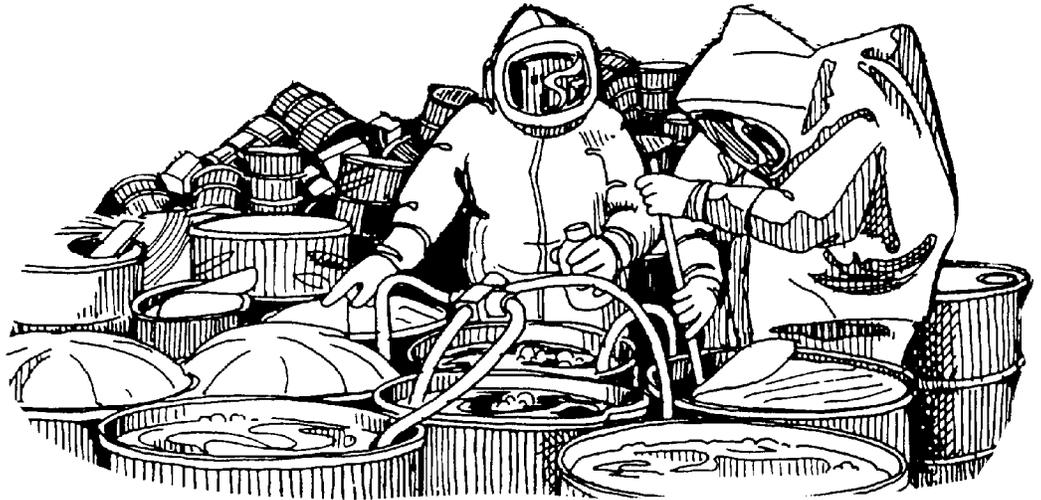
Certain health and safety policies have been instituted for all HTRW activities. At a minimum activities shall comply with:

- ! OSHA standard 29 CFR 1910.120, Hazardous Waste Site Operations and Emergency Response;
- ! OSHA standard 29 CFR 1926, Construction Industry Standards;
- ! OSHA standard 29 CFR 1960, Federal Employees Safety and Health Programs;

- ! FAR 52.236-13, Accident Prevention;
- ! Army Regulation 385 series;
- ! Engineer Regulation 385 series; and
- ! Engineer Manual 385-1-1, USACE, Safety and Health Requirements Manual.

The following documents are required to be developed for HTRW on-site activities:

- ! Safety and Health Program (SHP), a written document required by OSHA standard 29 CFR 1910.120;
- ! Site Safety and Health Plans (SSHPs);
- ! Health and Safety Design Analysis; and
- ! Safety, Health, and Emergency Response specifications.

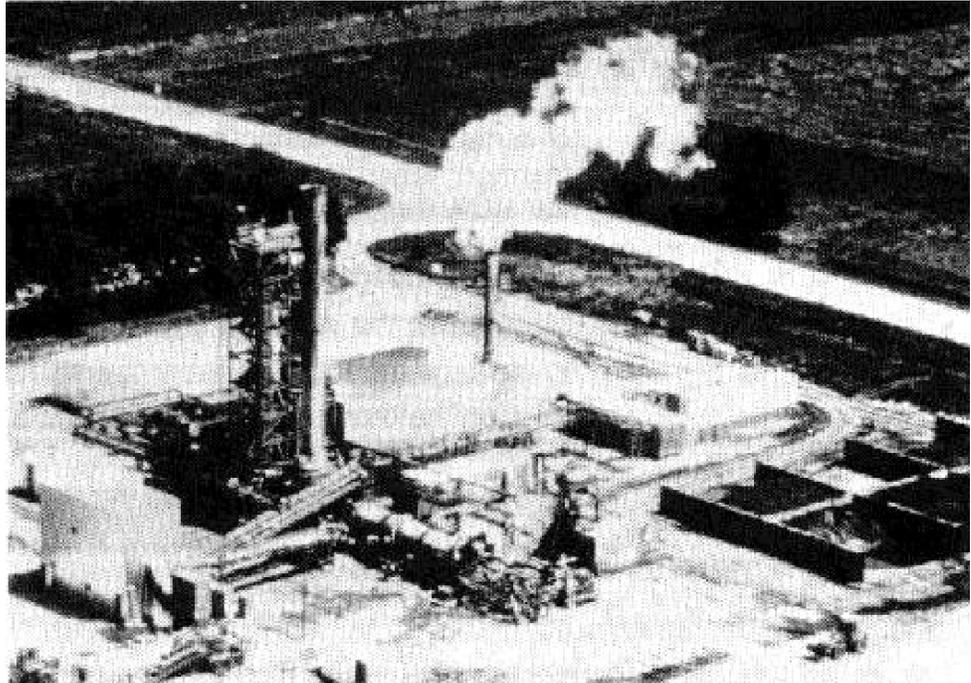


## **Chemical and Process Engineering**

The HTRW MCX Engineering staff includes chemical and process engineers experienced in:

- ! incineration,
- ! low-temperature thermal desorption,
- ! stabilization,
- ! solidification,
- ! soil vapor extraction,
- ! vitrification,
- ! bioremediation,
- ! air stripping,
- ! carbon adsorption, and
- ! chemical fixation.

This experience is used to evaluate data needs, to determine suitable treatment technologies, and to complete technical reviews of proposed remedial actions.



## **Cost Engineering**

Cost Engineering is a method of tracking costs of environmental remediation projects to ensure that quality work is performed at reasonable costs and to identify methods of reducing costs when possible. HQUSACE Construction Division is responsible for tracking costs of remedial actions (supervision and administration).



## **Technical Liaison Capabilities**

Each HTRW design district is assigned a technical liaison manager at the HTRW MCX. The technical liaison manager is the single point of contact for the district on MCX mailers. The technical liaison manager advocates district concerns and needs for resolution by the MCX staff. The technical liaison manager makes frequent visits to the district to become familiar with the district staff, capabilities, project requirements, and HTRW execution concerns.

Specifically, the technical liaison manager will:

- ! manage the MCX's review of district projects,
- ! coordinate and disseminate advice and assistance on HTRW technical policies,
- ! coordinate resolution of technical differences of opinion, and
- ! support the use of innovative technologies and research and development programs.

## **HTRW Studies and Analysis Capabilities**

The HTRW Studies and Analysis Branch at the HTRW MCX undertakes special studies and analysis on behalf of USACE that enhance abilities to execute, increase capability, and resolve significant HTRW issues. The Branch assists HQUSACE in development of national customers for the Corps division/district execution.

The HTRW Studies and Analysis Branch responsibilities include:

- ! reviewing Superfund IAGs to ensure USACE requirements are adequately addressed and
- ! managing execution of the USACE Potentially Responsible Parties program for the FUDs to assure consistency in PRP agreements negotiated with private corporations.

## **HTRW Support to Civil Works Projects**

The Corps' Civil Works Program constructs, operates, and maintains locks, dams, levees, etc. During the course of operation, environmental issues must be considered including:

- ! generation of hazardous wastes regulated under the Resource Conservation and Recovery Act (RCRA);
- ! transportation of hazardous materials regulated under the Hazardous Material Transportation Act (HMTA);
- ! owning and operating electrical equipment which may be regulated under the Toxic Substances Control Act (TSCA);
- ! discharges of air pollutants from equipment regulated under the Clean Air Act (CAA);
- ! discharges of pollutants to navigable waters regulated under the Clean Water Act (CWA); and
- ! response to spills regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Division and District Commanders must be aware of HTRW issues related to:

- ! discovery of HTRW,
- ! permitting requirements,
- ! recordkeeping requirements,
- ! land disposal restrictions,
- ! transportation requirements,
- ! release reporting requirements,
- ! remediation requirements,
- ! training requirements,
- ! inspections requirements,
- ! notifications requirements, and
- ! prohibitions.

Environmental support is provided to civil works projects through the Environmental Review Guide for Operations (ERGO) program. Through this program, geographic districts conduct multi-media environmental audits of Civil Works facilities. Deficiencies are identified and funds for corrective measures are requested. If the local geographic district and the HTRW design are not the same, the local geographic districts will then contact the HTRW district for technical assistance.

For new and ongoing Civil Works projects there is potential to encounter uncontrolled hazardous waste sites. The process for early discovery and efficient resolution of the associated issues will be built into the Civil Works projects in accordance with ER 1165-2-132 Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects. This ER gives detailed guidance on how the HTRW district and the HTRW MCX provide support to the Civil Works project in such instances.

## **Lessons Learned**

### **What is the HTRW Lessons Learned System?**

The USACE HTRW Lessons Learned System is a computer based system which has been designed to facilitate the exchange of information among multidisciplinary USACE elements with execution responsibilities in the HTRW arena. The system relies primarily on the electronic transfer of data to identify problem areas and collect corresponding ideas and solutions to distribute to system users.

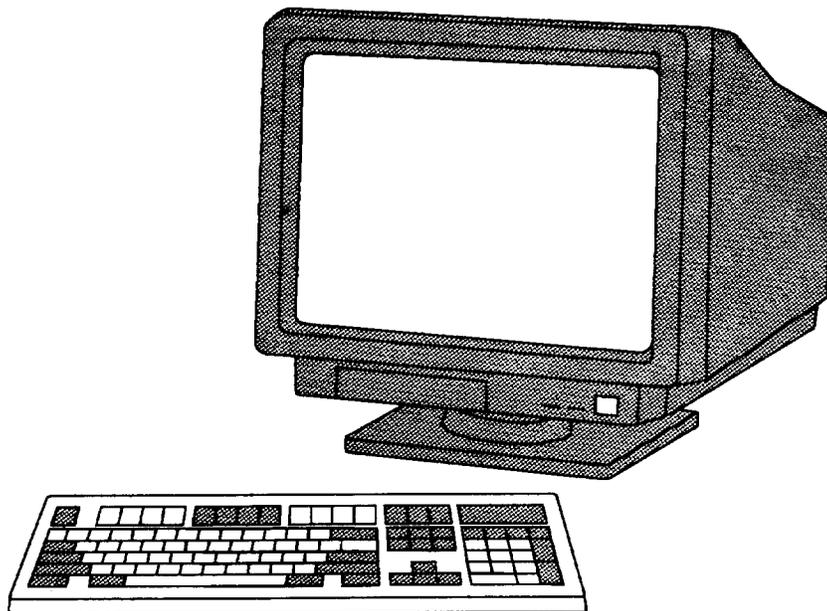
The system was originally developed by the North Central Division/ St. Paul District for execution of the EPA Construction Grants Program. Modifications were made relative to HTRW aspects. National implementation of the HTRW Lessons Learned System was assigned by HQUSACE to the HTRW MCX.

### **Why Implement a HTRW Lessons Learned System?**

Simply stated, a "lessons learned" is knowledge gained through experience which, if shared, would benefit the work of others. USACE experience in the HTRW arena is significant. Utilization of the HTRW Lessons Learned System provides USACE personnel involved in the HTRW program with a means of documenting valuable experience gained during execution of HTRW related activities. Sharing such experience with other HTRW personnel promotes more efficient execution of the USACE HTRW mission.

### **Implementation Guidance**

A 28 May 1991 memorandum from HQUSACE (CEMP-RT) to the Missouri River Division assigned as part of the HTRW MCX mission, implementation of the USACE HTRW Lessons Learned System initially developed by the North Central Division. Subsequently, Management Plan and Standard Operating Procedures documents were developed and the HTRW Lessons Learned System was implemented on a nationwide basis within USACE.



## **The USACE Program**

Implementation efforts regarding the HTRW Lessons Learned System primarily focused on the designated USACE HTRW design and construction districts. However, other USACE elements, including division offices and research and development laboratories, were invited to participate in the system implementation.

Initially, each district collects lessons learned observations in accordance with standard operating procedures developed by the district. Observations are uploaded to the HTRW MCX at the Missouri River Division by each district-designated point of contact. At this point, observations are briefly reviewed by MCX technical Staff. Finally, approved observations are placed in the system data base and made available for districts to download and are utilized during execution of HTRW program responsibilities.

Commanders should support the use of the system as a means of passing on lessons learned and preventing similar mistakes from occurring at other locations. All divisions and districts involved in HTRW work are encouraged to provide input into the system as well as reviewing the input of others.

### **Points of Contact**

HTRW Lessons Learned System Manager . . . . . (402) 221-7475  
HQUSACE (CEMP-RT) . . . . . (202) 504-4707

## **Innovative Technologies**

Innovative technologies are newly developed technologies that lack sufficient full scale application data to ensure routine consideration for HTRW site remediation. Innovative technologies may be new technologies or new applications of existing technologies. As such, innovative technologies are not generally considered under standard engineering practice and are not typically part of the competitive market process where available alternatives are routinely evaluated. In functional terms, all treatment technologies except for incineration and solidification/stabilization for source control and pumping with conventional treatment for ground water are considered to be "innovative". Examples of innovative treatment technologies include bioremediation, solvent extraction, soil washing, thermal desorption, chemical treatment and vacuum extraction.

### **Why Consider Innovative Technology Applications?**

The National Contingency Plan requires consideration of innovative technologies. Innovative technologies should be routinely considered during evaluation of treatment options and should not be eliminated from consideration solely because of uncertainties regarding performance and cost. Potential benefits often associated with innovative technologies include decreased costs, superior performance, greater community acceptance, and accelerated cleanups. Innovative technologies may be deemed cost effective, even if relative costs initially appear higher than for conventional options, after consideration of such benefits. Though not an immediate consideration, future projects will also benefit by information gained from previous innovative technology applications.

To justify the selection and implementation of innovative technologies, short and long term benefits such as more effective remedies and less costly solutions, must outweigh inherent risks such as false starts and potential process failures.

## **Implementation Guidance**

The SARA directed the EPA to establish an "Alternative or Innovative Technology Research and Demonstration Program" to facilitate remediation of Superfund sites. This legislation also encourages the military services to utilize new technologies in the Defense Environmental Restoration Program. It follows that prudent consideration and application of innovative technologies to USACE execution activities is a USACE goal.

### **The USACE Program**

Various USACE elements have responsibility for innovative technology development and application programs. Specifically mentioned here are USACE labs, HTRW design districts, and the HTRW Mandatory Center of Expertise. In addition, Innovative Technology Advocate positions have been established at Headquarters and within the HTRW MCX.

All of the USACE research and development laboratories, (the Waterways Experiment Station, Construction Engineering Research Laboratory, the Cold Regions Research and Engineering Laboratory, and the Topographic Engineering Center) have extensive technical and personnel resources relative to evaluation of emerging and developing innovative technologies. Of particular note is the Hazardous Waste Research and Development Center at USAWES. The center is designated an EPA center for the Best Demonstrated Available Technology (BDAT) program for treatment technology under RCRA. All phases of environmental restoration research have been supported by USAEWES efforts.

District offices with HTRW execution responsibilities, in particular designated design districts, are at the forefront relative to evaluation and actual implementation of innovative technologies. Required efforts include conducting treatability studies to ensure technologies under consideration are viable for individual site specific designs. In many cases, innovative contracting methods are utilized to facilitate implementation of innovative technologies in the field. Historically, the Kansas City and Omaha Districts have been assigned the bulk of HTRW design requirements within USACE. Correspondingly, most of the USACE HTRW innovative treatment technology projects will be initiated on a more widespread basis as HTRW design responsibilities are decentralized.

The HTRW MCX has been tasked with nationwide responsibilities regarding USACE HTRW programs. Innovative technology issues, including review and approval aspects as well as guidance development, fall under the umbrella of MCX responsibilities. In addition, the HTRW MCX has been charged with the overall responsibility of increasing the application of innovative treatment technologies within USACE on a national basis.

Innovative Technology Advocate (ITA) positions have been established at HQUSACE and within the HTRW MCX to advocate the consideration and evaluation of new or innovative technologies in HTRW application. ITA responsibilities include the following:

- ! acting as USACE focal points for technology transfer and dissemination of information to key personnel at divisions and districts;

- ! coordinating and interfacing with public and private elements including the research and development community, especially USACE laboratories;
- ! ensuring that individual projects reflect consideration and evaluation of innovative technologies; and
- ! promoting technology transfer through participation in conferences, workshops, and site demonstrations.

Pursuant to the Stevenson-Wydler Technology Innovation Act of 1980, as amended, Offices of Research and Technology Applications (ORTAs) have been established at all USACE R&D laboratories (see 15 U.S. C. 3710, et seq). The statutorily mandated functions of those offices are:

- ! to prepare applications assessments for selected R&D projects in which the lab is engaged that may have potential commercial applications;
- ! to provide and disseminate information on Federally owned or originated products, processes, and services having potential application to state and local governments and to private industry;
- ! to cooperate with and assist organizations which line the R&D resources of the lab and the Federal government as a whole to potential users in state and local governments and private industry;
- ! to provide technical assistance to state and local government officials; and
- ! to participate in regional, state and local programs designated to facilitate transfer of technology for the benefit of the region, state, or local jurisdiction in which the Federal laboratory is located.

**Points of Contact**

USAEWES, Environmental Engineering Division . . . (601) 634-3703  
 USACERL, Environmental Engineering Division . (800) USA-CERL  
 USACRREL, Experimental Engineering Division . . . (603) 646-4405  
 HTRW MCX, Environmental HTRW Division . . . . . (402) 221-3380  
 Innovative Technology Advocates  
 HQUSACE . . . . . (202) 504-4335  
 HTRW MCX . . . . . (402) 221-7381

**Emergency Management**

Emergency Management is the organizational element established to develop and manage the disaster preparedness and response mission throughout the Corps of Engineers. Emergency Management is responsible for preparedness planning and response activities for a variety of disasters. This responsibility includes those functions as they pertain to spills or releases of hazardous materials at Civil Works projects. Through a combination of planning, training, and coordination, an effective, expedient response is guaranteed should incidents occur.

## **What are the Current Emergency Response Regulations?**

Emergency Management Division/Branch exercises its authority under the provisions of various regulations. Its existence is authorized/defined under Public Law 84-99, as amended (Flood Control and Coastal Storm Emergencies). Under this law, the Corps of Engineers has the responsibility for:

- ! preparedness planning,
- ! emergency operations activities,
- ! rehabilitation of levees,
- ! emergency water assistance, and
- ! hazard mitigation.

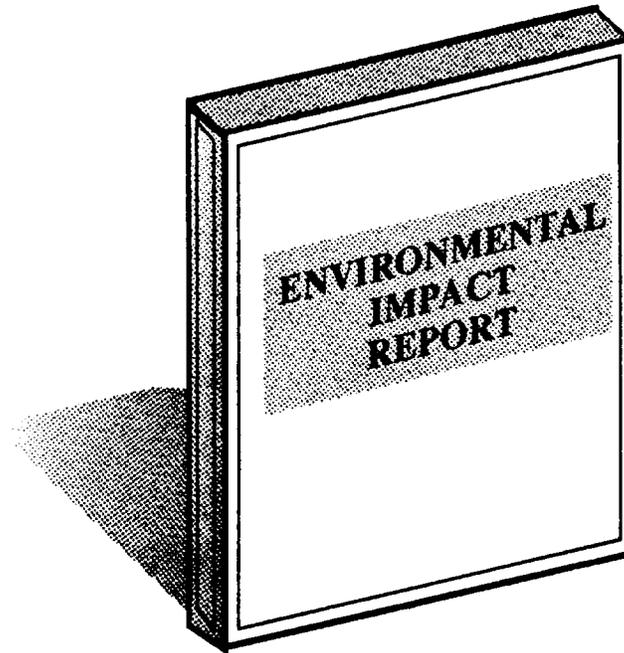
Disaster assistance, may be performed/provided directly by the Army under AR 500-60 (The Disaster Relief Act.) This authority allows commanders to institute emergency response activities in order to save human life, prevent suffering, and minimize property damage and destruction. These activities may be undertaken during extremely exigent situations and without receiving instructions from higher headquarters. The Corps of Engineers, Emergency Management Division, also has responsibilities delegated by ER 1130-2-434 (Response to Oil and Hazardous Substances Incidents), AR 200-1 (Environmental Protection and Enhancement), and the National Oil and Hazardous Substances Pollution Contingency Plan. Requirements under these regulations include preparedness planning, notification responsibilities, and response remediation activities if spills or releases occur.

## **What is the Corps' Emergency Management Program?**

The Corps plays a significant part in planning for, notification of, and responding to spills/releases of HTRW substances. All Corps facilities are required to develop spill contingency plans. Procedures for notification and activation of resources have been developed. Using these preestablished emergency management procedures, responses (to include both personnel and equipment) can be rapidly deployed to the incident location.



In addition, the Corps provides representation on the Regional Response Teams (RRT) for all Federal regions (I through X). The RRTs are comprised of representatives from various Federal agencies responsible for spill contingency planning and coordination of response actions. Members of the RRT are able to provide advice regarding containment and cleanup methods. They may also, if requested to do so, coordinate and direct response activities as the on-scene coordinator. The RRT may be activated by any of the RRT members or by request of the on-scene-coordinator. Additionally, the team may be activated if an incident crosses state boundaries, exceeds the capabilities of the on-scene-coordinator or poses a significant threat to public health or the environment.



### **National Environmental Policy Act (NEPA) Document Preparation**

The NEPA process is a formal procedure designed to ensure Federal agencies identify and assess alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the human environment. The Corps prepares NEPA documentation in accordance with the policies and procedures specified in AR 200-2.

As a Federal agency, NEPA requires the Corps to:

- ! integrate NEPA early in the planning process,
- ! use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these action upon the human environment,
- ! encourage and facilitate public involvement in decisions which affect the quality of the human environment.

## **Design and Construction Management of HTRW Projects**

The Corps technical assistance capabilities also includes design and construction of HTRW projects.

As a division/district commander you should know that the Corps:

- ! prepares detailed scopes of work of HTRW remedial action projects,
- ! designs HTRW projects using in-house staff as well as outside contractors,
- ! provides technical review of HTRW project designs, and
- ! provides management, technical oversight, and technical assistance for remedial actions.

Corps staff must be knowledgeable in environmental regulations impacting project design and construction activities such as:

- ! Clean Air Act regulations which may impact the types and quantities of air emissions from the remedial action projects;
- ! Clean Air Act regulations which may require the project design to include specific types of pollution control devices to reduce air emissions;
- ! Resource Conservation and Recovery Act regulations which may require the project design to meet specific design requirements for RCRA regulated units such as lining and leachate collection systems for landfills, destruction and removal efficiency rates for incinerators, etc.;
- ! Resource Conservation and Recovery Act regulations regarding accumulation and disposal of hazardous wastes generated during construction activities such as manifesting requirements, marking requirements, etc.;
- ! Underground Storage Tank regulations which may require tank and piping designs to meet specific requirements for secondary containment and/or leak detection
- ! Clean Water Act regulations which may require project design to include pollution control equipment to meet discharge limitations; and
- ! Comprehensive Environmental Response Compensation and Liabilities Act requirements which may exempt activities from permitting requirements.

