



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 29 1991

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

OSWER Publication Number: 9360.4-11FS

MEMORANDUM

SUBJECT: Fact Sheet on Removal Program Quality Assurance/Quality Control (QA/QC) Initiatives: Summary of Activities

FROM: Henry L. Longest II, Director
Office of Emergency and Remedial Response

TO: Director, Waste Management Division
Regions I, IV, V

Director, Emergency and Remedial Response Division
Region II

Director, Hazardous Waste Management Division
Regions III, VI, VII, VIII, IX

Director Hazardous Waste Division
Region X

Director, Environmental Services Division
Regions I, VI, VII

PURPOSE

This memorandum transmits a fact sheet entitled "Removal Program QA/QC Initiatives: Summary of Activities."

BACKGROUND

The Environmental Response Team (ERT), located in Edison, New Jersey, is responsible for managing quality assurance/quality control (QA/QC) activities for the removal program. In this regard, ERT has produced many guidances and tools to assist On-Scene Coordinators (OSCs) in fulfilling their QA/QC responsibilities.

OBJECTIVE

This objective of this fact sheet is to inform OSCs, other EPA personnel, other Federal Agencies, and other interested parties on removal program QA/QC activities. Information is provided on available guidances, standard operating procedures, checklists, software and training. These tools are intended to assist field personnel in complying with Agency policy for all environmental data collection and environmental measurement during removal actions. The fact sheet specifies highlights of each document, where to obtain more information, and a timeframe for final publication and availability.

IMPLEMENTATION

This is an advance copy of the fact sheet and Regions should feel free to reproduce the attached advance copy for internal use while the fact sheet is being printed. A supply of printed documents will be sent to your Regional Office within the next eight weeks, and will be inventoried for agency use at the Superfund Document Center, Headquarters, 401 M Street SW, OS-240, Washington, DC 20406; E-mail: OERR/PUBS. Contractors and members of the public may purchase the documents from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161; (703) 487-4600.

Questions regarding this fact sheet should be addressed to William Coakley, ERT, FTS 8-340-6921.

Attachment

cc: Removal Managers, Regions I-X
Superfund Branch Chiefs, Regions I-X
OERR Division Directors
Technical Assistance Team (TAT) Deputy Project Officers
Emergency Response Cleanup Services (ERCS) Deputy Project Officers
Regional QA Officers
Duane Geuder, CORAS



Removal Program QA/QC Initiatives: Summary of Activities

Office of Emergency and Remedial Response
Environmental Response Branch, MS-101

Quick Reference Fact Sheet

This fact sheet is the first in a series of intermittent fact sheets on the Removal Program's Quality Assurance/Quality Control (QA/QC) activities for On-Scene Coordinators (OSCs), other EPA personnel, other Federal Agencies, and other interested parties. These activities include developing and disseminating guidance documents, software, operating procedures, and checklists, as well as providing training. The Environmental Response Team (ERT) has responsibility for these activities. The activities will assist field personnel in complying with Agency policy for all environmental data collection and environmental measurement during removal actions. Highlights of, detailed information on, a timeframe for final publication and availability of each of the documents are included in this fact sheet. Updated fact sheets will be published periodically to include an explanation of key issues, discuss additional training, and to update the publication schedule of manuals as necessary.

Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures

BACKGROUND

As stated in the Administrator's Memorandum of May 30, 1979, Agency policy requires that all EPA organizational units that perform environmentally related measurements, including program offices, EPA regional offices, and EPA laboratories, participate in a centrally managed quality assurance program. This requirement applies to all environmental monitoring and measurements mandated or supported by EPA through regulations, grants, contracts, or other formal means not currently covered by regulation. The responsibility

for developing, coordinating, and directing the implementation of this program has been delegated to the Office of Research and Development, which has established the Quality Assurance Management Staff for this purpose. As stated in EPA Executive Order 5360.1, "Policy and Program Requirements to Implement the Mandatory Quality Assurance Program," the primary goal of the QA/QC program is to ensure that all environmentally related measurements performed or supported by EPA produce data of known quality.



The Removal Program's QA/QC guidance consists of two parts: part one provides guidance on establishing, implementing, and using QA/QC protocols for data collection activities; and part two provides guidance for reviewing and validating laboratory data packages according to the guidance established in part one.

PART ONE

Part one includes a detailed description of each section to be contained in a sampling QA/QC plan. The development of the plan is the responsibility of the OSC. The OSC reviews and approves the site-specific plan and may obtain assistance from the Regional QA/QC Officer. The guidance assists the OSC in ensuring that reliable, accurate, and quality data are obtained through field sampling efforts as well as field and laboratory analytical services. The sampling QA/QC plan produced from this guidance is neither intended to supersede nor replace the generic QA project plan, but rather to augment the project plan by detailing site-specific information regarding sampling, analysis, and QA/QC protocols.

PART TWO

Part two provides guidance on the validation of laboratory data packages. It is a compilation of the procedures used in the Contract Laboratory Program (CLP) and those found in the "Laboratory Data Validation Functional Guidelines for Evaluating Organic, Inorganics, Pesticides, and Dioxin Analysis." This guidance was developed for the Emergency Response Division's (ERD) use and is not intended to supersede the guidance documents developed for CLP data validation used for remedial activities.

SOFTWARE

Two software packages that support the QA/QC Guidance for Removal Activities are QASPER, the Quality Assurance Sampling Plan for Emergency Response, and e-DATA for data validation procedures.

QASPER

QASPER is a PC-based software package which compiles generic text and user provided site-specific information into a QA/QC sampling plan. QASPER addresses the nine sections in parts one and two of the QA/QC guidance.



e-DATA

e-DATA is a PC-based system designed to manage, validate, report, and communicate hazardous waste sample information generated through the sample collection, analysis, and validation process.

It consists of three separate and distinct modules which reflect the needs of the OSC, the laboratory, and the data validator.

The appropriate e-DATA system modules are installed at each location and communicate via a Central Node or bulletin board. The Central Node module provides the centralized electronic repository and controls the file transfer between the site, lab, and validation modules. e-DATA is available to OSCs whenever ERT is accessed for on-site monitoring.

Representative Sampling Guidances

The Representative Sampling Guidances are a series of documents designed to assist Removal Program OSCs and other field staff in obtaining representative samples at removal sites. Representative sampling is the degree to which a sample or group of samples accurately characterize site conditions. The guidance documents are designed to assist field personnel in conducting representative sampling, including evaluating historical data, designing a sampling plan, collecting samples, generating data, evaluating variability, applying QA/QC requirements, and interpretation of data.



The guidances address specific Removal Program objectives including identifying the threat, delineating sources and the extent of the contamination, and confirming the achievement of cleanup standards. Because many costly decisions are based on the sampling data, OSCs and other field personnel need to understand the importance

of accurately sampling to characterize actual site conditions.

The documents are divided by sampling medium: air, soil, ecological, waste, and water. Each document has unique aspects, but the overall objectives of representative sampling are included in all five documents.

SOIL

This document includes information on representative soil sampling. It describes sampling design, field sample collection, field sample preparation, quality assurance evaluation, and data interpretation and presentation. Soil sampling, field screening, and geophysical equipment are described and assessed in tables. A case study illustrates the principles described in the document.

AIR

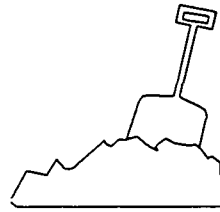
This document includes information on representative air sampling. Because air is a unique medium when compared to soil and groundwater, the statistical considerations developed for other media are not applicable to air. Air concentrations vary at a given location over time. Because of this variability, this document describes sampling applications, sample design considerations, sampling and analytical techniques, atmospheric modeling, and quality assurance/quality control that are unique for air.

ECOLOGICAL

This document explains the type of information that an ecological assessment will provide. This includes but is not limited to the effects of pollutants on plant and animals and the ecological impacts of the removal action. This document is still in early draft form but the chapters include development of data quality objectives, development of an ecological sampling plan, ecological sampling methods and equipment, quality assurance/quality control, statistical considerations, and data validation and interpretation. This document will include various stand-alone decision trees for on-site use.



WASTE



The development of this volume will begin in July 1991. It will address representative sampling of wastes piles, waste lagoons, drums, tank cars, and mixed waste, as well as how to obtain wipe and chip samples.

WATER

The development of this volume will begin in December 1991. It will address groundwater and surface water representative sampling.



ERT Standard Operating Procedures

In 1987, EPA began a program to promote consistencies in the Removal Program's sampling and analytical protocols. Consequently, ERT wrote detailed Standard Operating Procedures (SOPs) on 45 field activities. SOPs promote uniform and consistent collection of monitoring data and help define and control uncertainties. The ERT SOP compendiums will soon be available for use by the Removal Program.

The 45 ERT SOPs will be published in seven compendiums:

- ERT Groundwater Sampling Procedures
- ERT Waste Sampling Procedures
- ERT Soil Sampling and Surface Geophysics Procedures
- ERT Surface Water and Sediment Sampling Procedures
- ERT Toxicity Testing Procedures
- ERT Field Analytical Procedures
- ERT Air Sampling Procedures

The ERT Groundwater Sampling Procedures include procedures for decontaminating sampling equipment; and provide general guidelines for

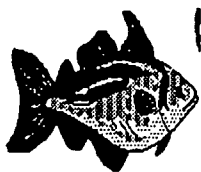
groundwater well sampling, and guidelines for conducting controlled pumping tests and slug tests. The compendium provides a quick means of evaluating underground contamination with soil gas sampling, summarizes the methods used for monitoring well installation and well development, and sets guidelines for the determination of the depth of water in an open borehole, cased borehole, monitoring well or piezometer.

The ERT Waste Sampling Procedures provide technical guidance on safe and cost-effective response actions at hazardous waste sites containing waste in piles, drums, and tanks. It also outlines the recommended protocol for collecting representative chip, wipe, and sweep samples to monitor potential surficial contamination, as well as protocols for decontaminating sampling equipment.

The ERT Soil Sampling and Surface Geophysics Procedures describe procedures for collecting representative soil samples and provide a quick means of evaluating underground contamination with soil gas sampling. Also, this compendium addresses the general procedures used to acquire surface geophysical data which can identify and delineate subsurface waste and help interpret geological and hydrogeological site data.

The ERT Surface Water SOP describes procedures for aqueous and nonaqueous sampling of lakes, lagoons, and streams on the surface and at various depths. The ERT Sediment Sampling SOP, in the same compendium, provides procedures on sediment sampling beneath standing and running water. This compendium also includes an equipment decontamination SOP.

The ERT Toxicity Testing Procedures include nine tests of toxicity involving larval *Pimephales promelas*, *Daphnia magna*, *Daphnia pulex*, *Ceriodaphnia dubia*, or *Selenastrum capricornutum*.



The ERT Field Analytical Procedures include SOPs on x-ray fluorescence (XRF), photoionization detectors (PID), Photovac gas chromatographs, the Sentex gas chromatograph, and the Micromonitor M200 gas chromatograph.

The ERT Air Sampling Procedures include SOPs on SUMMA canister cleaning, sampling, and analysis; preparation of SUMMA canister field standards; and low level methane analysis of SUMMA canister gas samples. The compendium also includes asbestos sampling, Tedlar bag sampling, charcoal tube sampling, Tenax tube sampling, and procedures for using polyurethane foam (PUF) samplers.

The first five compendiums listed above have been completed, sent to the Office of Emergency and Remedial Response (OERR) for publication and will be available in the early summer of 1991. The remaining two compendiums are near completion, and should be available in the fall.

Performance Evaluation Samples

Performance evaluation (PE) samples provide EPA with an external quality assurance measure for laboratory and/or method performance. Traditionally, PE samples are prepared and certified by the Agency's three environmental monitoring and support laboratories (EMSL).

Most PE samples are available only in a water medium, which cannot truly measure laboratory or method performance for air or soil samples. Currently, EMSL/Las Vegas is obtaining actual site samples and analyzing them for contaminants of interest at specific levels. PE samples for metals in soil are available, along with blank soil samples. If the combination of chemical contaminants, or analyte profile, is appropriate for evaluating



laboratory/method performance, the samples are then homogenized well, the analyte concentrations are certified, and the samples are packaged into single sample lots. These samples will then be made available to the Regions to include with actual site samples being sent to CLP and other contract laboratories.

Each Region has a designated coordinator for

requesting PE samples. This person orders PE samples from the appropriate EMSL contact. Generally, PEs for water and ecological samples are available from EMSL/Cincinnati, PEs for asbestos and ambient air organics are available from EMSL/RTP, and PEs for soil/sediments and wastes are available from EMSL/Las Vegas.

Analytical Solicitation and Deliverables Checklist

The availability of analytical methods and support services from non-CLP laboratories is a primary concern to Regional offices. In response to the concern, ERD is developing a detailed checklist for the Regional offices to use to collect useful information about non-CLP laboratories. On the checklist, the laboratory will respond to questions regarding the available analytical and support services and turnaround times offered by potential non-CLP laboratories. In this way, Analytical Coordinators can put non-CLP analytical resources to optimal use. Using the checklist, Analytical Coordinators can reduce the length of time spent learning about a laboratory, and can make better judgments when selecting a laboratory, both of which will minimize removal costs.



This checklist is expected to be available by June 1991.

Field Audit Checklist

A field audit checklist was developed to evaluate the need for training and to improve field sampling procedures. It is a tool to ensure that all field activities are consistent for each TAT and ERCS

contractor. The contractor uses the audit checklist as part of their internal audit activities required by their QA Program Plan and the contract statement of work.

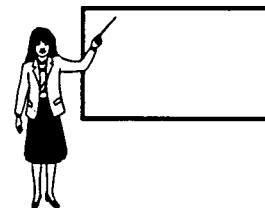


Using this checklist, the field activities auditor is responsible for auditing ten percent of his/her site activities, verifying that approved protocols, spelled out in the QA Sampling Plan, are being followed. The audit checklist, together with a summary of findings and any necessary corrective actions, are to be filed with the Regional TAT or ERCS office, the EPA project officer, and the EPA Deputy Project Officer. Periodically, the QA Coordinator for ERD will make office and/or site visits to review these audit checklists, to assess the need for program improvements and trainings.

Training

REPRESENTATIVE SOIL SAMPLING TRAINING

This course is designed for new staff entering the various components of the Removal Program, for individuals currently involved with sampling plan design and actual sampling,



and as a train-the-trainer program for mid-level management and group leaders. The course spans 1 1/2 days and involves several representative soil sampling documents and a case study exercise using the example site in the ERT guidance.

QUALITY ASSURANCE/QUALITY CONTROL TRAINING

This course is designed for individuals interested in acquiring knowledge in establishing, implementing, and using QA/QC protocols for data collection activities performed under the Removal Program.

The 1 1/2 day course begins with information on the contents of a sampling plan, the QA/QC objectives and levels, and a hands-on exercise on QA/QC procedures using the QASPER software. A round-table discussion on data validation procedures is held at the conclusion of the course.

**Where to Obtain More Information on
Removal Program QA/QC Activities**

QA/QC GUIDANCE

This document is available from EPA's Center for Environmental Research Information (CERI) at 513-569-7652 or FTS 684-7562. The OSWER directive number is 9360.4-01.

REPRESENTATIVE SAMPLING GUIDANCE

These documents are expected to be available at CERI according to the following schedule:

Soil - July 1991

Air - July 1991

Ecological - January 1992

Waste - February 1992

Water - September 1992

The documents listed above will be distributed to the Emergency Response Branch and regional QA Officers.

ERT STANDARD OPERATION PROCEDURES

The following ERT compendiums are expected to be available from CERI by August 1991. These compendiums will be available to On-Scene Coordinators and Regional QA officers from ERT.

Compendium of ERT Groundwater Sampling Procedures - OSWER directive 9360.4-06

Compendium of ERT Waste Sampling Procedures - OSWER directive 9360.4-07

Compendium of ERT Soil Sampling and Surface Geophysics Procedures - OSWER directive 9360.4-02

Compendium of ERT Surface Water and Sediment Sampling Procedures - OSWER directive 9360.4-03

Compendium of ERT Toxicity Testing Procedures - OSWER directive 9360.4-08

Compendium of ERT Field Analytical Procedures - OSWER directive 9360.4-04

Compendium of ERT Air Sampling Procedures - OSWER directive 9360.4-05.

PERFORMANCE EVALUATION SAMPLES

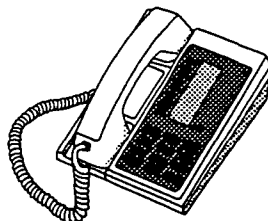
To obtain more information on Performance Evaluation Samples, contact your Performance Evaluation Coordinator in the Regional Emergency Response Branch.

ANALYTICAL SOLICITATION AND DELIVERABLES CHECKLIST

This checklist is used to determine useful information about non-CLP laboratories. Contact your TAT Regional Analytical Coordinators for more information.

FIELD AUDIT CHECKLIST

These checklists are available from the Regional Internal (TAT Contractor) Audit Program of Field Activities.



For further information on training and any of the above activities or documents, call Mr. William Coakley at: (908) 906-6921 or FTS #: 340-6921.