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Data Quality Objectives for Remedial Response Activities

Development Process

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DATA QUALITY OBJECTIVES

FOR REMEDIAL RESPONSE ACTIVITIES

Development Process

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NOTICE

This document has been reviewed in accordance with U.S. Environmental Protection Agency policy and approved for publication. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

PREFACE

This document, Data Quality Objectives For Remedial Activities (Development Process), guides the user through the process of developing data quality objectives (DQOs) for site-specific remedial activities. Remedial response activities include remedial investigations (RI), feasibility studies (FS), remedial design (RD), and remedial action (RA). This guidance manual should be used in conjunction with the Data Quality Objectives For Remedial Response Activities (Example Scenario - RI/FS Activities at a Site With Contaminated Soils And Ground Water) which provides an outline of how the DQO process is applied to a hypothetical site situation.

These guidance documents will be updated in the future to focus on quantification of DQO's and other statistical issues.

This is one of a series of guidance documents prepared in accordance with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) final rule, published in the Federal Register November 20, 1985 and effective February 18, 1986. These guidance documents will be updated in the near future to be consistent with provisions of the Superfund Amendments and Reauthorization Act (SARA) and the new NCP. The guidance document series includes the following titles:

- Guidance on Remedial Investigations Under CERCLA (EPA 540/G-85/002)
- Guidance on Feasibility Studies Under CERCLA (EPA 540/G-85/003)
- Superfund Remedial Design and Remedial Action Guidance (OSWER Directive 9355.0-4A)
- Compendium of Field Operations Methods (planned June 1987)
- Superfund Public Health Evaluation Manual (OSWER Directive 9285.4-1)
- Superfund Exposure Assessment Manual (OSWER Directive 9285.5-1)

Collectively, these documents provide guidance for the development and performance of technically sound and cost-effective remedial response activities which will support the program goals of both the Office of Emergency and Remedial Response (OERR) and the Office of Waste Programs Enforcement (OWPE). These documents are also available for use by state agencies and private parties conducting remedial response activities to ensure consistency with the intent of CERCLA and SARA.

TABLE OF CONTENTS

Section		Page
1.0	INTRODUCTION	1-1
1.1	PURPOSE	1-1
1.2	DATA QUALITY OBJECTIVE POLICY BACKGROUND	1-2
1.3	FORMAT	1-2
2.0	DATA QUALITY OBJECTIVE DEVELOPMENT PROCESS	2-1
2.1	DQO STAGES	2-1
2.1.1	STAGE 1 - IDENTIFY DECISION TYPES	2-1
2.1.2	STAGE 2 - IDENTIFY DATA USES/NEEDS	2-1
2.1.3	STAGE 3 - DESIGN DATA COLLECTION PROGRAM	2-1
2.2	RI/FS PROCESS	2-1
2.2.1	GENERAL APPROACH	2-3
2.2.2	PHASED RI/FS APPROACH	2-3
2.2	REMEDIAL DESIGN	2-3
2.4	REMEDIAL ACTION	2-5
2.5	DATA QUALITY OBJECTIVES DOCUMENTATION	2-5
2.6	REFERENCES	2-5
3.0	RI/FS DQO STAGE 1 - IDENTIFY DECISION TYPES	3-1
3.1	IDENTIFY AND INVOLVE DATA USERS	3-1
3.1.1	DECISION MAKER'S ROLE	3-1
3.1.2	DATA USERS' ROLE	3-3
3.2	EVALUATE AVAILABLE INFORMATION	3-3
3.2.1	DESCRIBE CURRENT SITUATION	3-3
3.2.2	REVIEW AVAILABLE DATA	3-5
3.2.3	ASSESS ADEQUACY OF DATA	3-6
3.3	DEVELOP CONCEPTUAL MODEL	3-6
3.3.1	EVALUATION OF THE CONCEPTUAL MODEL	3-6
3.3.2	COMPUTER MODELS	3-9
3.4	SPECIFY OBJECTIVES/DECISIONS	3-10
3.4.1	OBJECTIVES	3-10
3.4.2	DECISION TYPES	3-10
3.5	REFERENCES	3-12
4.0	RI/FS DQO STAGE 2 IDENTIFY DATA USES/NEEDS	4-1
4.1	IDENTIFY DATA USES	4-3
4.1.1	DATA USE CATEGORIES	4-3
4.1.2	RI/FS USES	4-7
4.2	IDENTIFY DATA TYPES	4-7
4.3	IDENTIFY DATA QUALITY NEEDS	4-9
4.3.1	DATA QUALITY FACTORS	4-9
4.3.2	COST ANALYSIS OF ALTERNATIVES	4-13
4.4	IDENTIFY DATA QUANTITY NEEDS	4-13
4.5	EVALUATE SAMPLING AND ANALYSIS OPTIONS	4-14

Preceding page blank

TABLE OF CONTENTS
(Continued)

		Page
4.5.1	SAMPLING AND ANALYSIS APPROACH (PHASING)	4-14
4.5.2	RESOURCE CONSIDERATIONS	4-17
4.6	REVIEW PARCC PARAMETER INFORMATION	4-17
4.6.1	PRECISION	4-17
4.6.2	ACCURACY	4-18
4.6.3	REPRESENTATIVENESS	4-18
4.6.4	COMPLETENESS	4-19
4.6.5	COMPARABILITY	4-19
4.7	UTILIZING PARCC PARAMETER INFORMATION	4-19
4.8	REFERENCES	4-20
5.0	RI/FS DQO STAGE 3 - DESIGN DATA COLLECTION PROGRAM	5-1
5.1	ASSEMBLE DATA COLLECTION COMPONENTS	5-1
5.2	DEVELOP DATA COLLECTION DOCUMENTATION	5-1
5.2.1	SAMPLING AND ANALYSIS PLANS	5-1
5.2.2	WORK PLANS	5-4
5.2.3	ENFORCEMENT CONCERNS	5-4
5.3	REFERENCES	5-5
6.0	REMEDIAL DESIGN (reserved)	
7.0	REMEDIAL ACTION (reserved)	
APPENDIX A	STATISTICAL CONSIDERATIONS	
APPENDIX B	ANALYTICAL CONSIDERATIONS	
APPENDIX C	SAMPLING CONSIDERATIONS	
APPENDIX D	REVIEW OF QAMS DQO CHECKLIST	
APPENDIX E	POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS	
APPENDIX F	HISTORICAL PRECISION AND ACCURACY DATA CLASSIFIED BY MEDIA BY ANALYTICAL LEVEL	
APPENDIX G	RCRA APPENDIX VIII CLP HSL COMPARISON	
APPENDIX H	CONTRACT REQUIRED DETECTION LIMITS FOR HSL ANALYSES USING CLP IFB PROCEDURES	

LIST OF FIGURES

Figure		Page
2-1	DQO Three-Stage Process	2-2
2-2	Phased RI/FS Approach and the DQO Process	2-4
3-1	DQO Stage 1 Elements	3-2
3-2	Decision Makers Data Users Interaction	3-4
3-3	Elements of a Conceptual Evaluation Model	3-7
3-4	Example Conceptual Model Illustration	3-8
3-5	Relationship of Risk and Data Quality/Quantity	3-13
4-1	DQO Stage 2 Elements	4-2
4-2	Sample Type Specification Logic Diagram	4-8
4-3	Integration of Analytical Support Levels	4-16
5-1	Stage 3 Elements Design Data Collection Program	5-2

LIST OF TABLES

Table		Page
3-1	Generic RI/FS Objectives	3-11
4-1	Data Uses	4-4
4-2	DQO Summary Form	4-5
4-3	Summary of Analytical Levels	4-11
4-4	Appropriate Analytical Levels	4-12
5-1	Quality Assurance Project Plan Elements	5-3

LIST OF ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirements
ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)
CDC	Centers for Disease Control
CLP	Contract Laboratory Program
COE	U.S. Army Corps of Engineers
DQO	Data Quality Objective
EMSL-LV	Environmental Monitoring and Support Laboratory - Las Vegas
ESD	Environmental Services Division (of EPA)
FIT	Field Investigation Team
FS	Feasibility Study
GC/MS	Gas Chromatograph/Mass Spectrograph
HSL	Hazardous Substance List
MDL	Method Detection Limit
NBS	National Bureau of Standards
NCP	National Contingency Plan
NEIC	National Enforcement Investigation Center
NPL	National Priorities List
ORC	Office of Regional Counsel
PARCC	Precision, Accuracy, Representativeness, Completeness, Comparability
PRP	Potentially Responsible Party
QAMS	Quality Assurance Management Staff
QAPP	Quality Assurance Program Plan
QAPjP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAS	Routine Analytical Service
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RSCC	Regional Sample Control Center
S&A	Sampling and Analysis
SARA	Superfund Amendments and Reauthorization Act of 1986
SAS	Special Analytical Service
SMO	Sample Management Office
SRM	Standard Reference Material
TAC	Technical Advisory Committee
TAT	Technical Assistance Team
TIC	Tentatively Identified Compounds
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

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1.0 INTRODUCTION

Data quality objectives (DQOs) are qualitative and quantitative statements which specify the quality of the data required to support Agency decisions during remedial response activities. DQOs are determined based on the end uses of the data to be collected. For example, depending on the project phase, sufficient data may have to be collected to characterize the site, evaluate remedial alternatives, determine design criteria, or monitor site conditions and/or remedial action effectiveness. DQOs are applicable to all data collection activities, including those performed for preliminary assessments/site investigations (PA/SI), remedial investigations (RI), feasibility studies (FS), remedial design (RD), and remedial actions (RA). The level of detail and data quality needed will vary based on the intended use of the data. The variability of site characteristics makes it impossible to apply a generic set of DQOs to all CERCLA activities, however investigators are expected to take advantage of previous experience and data collected for similar sites.

DQOs are established prior to data collection and are not considered a separate deliverable. Rather, the DQO development process is integrated with the project planning process, and the results are incorporated into the sampling and analysis (S&A) plan, quality assurance project plan (QAPJP) and, in general terms, into the work plan for the site. The DQO process results in a well thought out sampling and analysis plan which details the chosen sampling and analysis option and statements of the confidence in decisions made during the remedial process. Confidence statements are possible through the application of statistical techniques to the data.

Data quality objectives should be specified for each data collection activity associated with a remedial response. The majority of these data collection activities take place during a remedial investigation (RI) but additional data needs may be identified during the feasibility study (FS), remedial design (RD), and remedial action (RA).

All investigation activities should be conducted and documented in a manner that ensures that sufficient data of known quality are collected to support sound decisions concerning remedial action selection. This applies to fund-lead, federal or state enforcement-lead, and potentially responsible party-lead projects.

1.1 PURPOSE

The purpose of this guidance document is to identify the framework and process by which DQOs are developed and the individuals responsible for development of DQOs. This document is intended to guide the user through the process of DQO development. Each site will have a unique history, data availability, and other factors. Therefore, a unique set of DQOs must be developed for each site.

This DQO guidance acts as a supplement to existing remedial program guidance by providing procedures for determining a quantifiable degree of certainty which can be used in making site-specific decisions. In actual practice to date, projects conducted under CERCLA have complied with the intent of the DQO process. DQOs have been incorporated as parts of sampling and analytical plans, quality assurance project plans or work plans. The purpose of this guidance is to provide a more formal approach to integration of DQO development with S&A plan development and to improve the overall quality and cost effectiveness of data collection and analysis activities.

This guidance focuses specifically on the DQO process. RI/FS activities (planning and implementation) are presented only as a framework for DQOs and as such are not fully developed in accordance with RI/FS guidance. Similarly, this document is not meant to be guidance on overall development of sampling and analysis plans, quality assurance project plans, or work plans. Future documents will emphasize statistical considerations in the DQO process.

CLP SEMI-VOLATILE HSL COMPOUNDS AND CRDL
(continued)

Compound name	SPCC[a] or CCC[b]	Low Soil CRDL, ug/kg	Low Water CRDL, ug/L	CAS Number
N-Nitrosodiphenylamine	CCC	330	10	86-30-6
4-Bromophenyl-phenylether		330	10	101-55-3
Hexachlorobenzene		330	10	118-74-1
Pentachlorophenol	CCC	1,600	50	87-86-5
Phenanthrene		330	10	85-01-8
Anthracene		330	10	120-12-7
Di-n-butylphthalate		330	10	84-74-2
Fluoranthene	CCC	330	10	206-44-0
Pyrene		330	10	129-00-0
Butylbenzylphthalate		330	10	85-68-7
3,3'-Dichlorobenzidine		660	20	91-94-1
Benzo(a)anthracene		330	10	56-55-3
bis(2-Ethylhexyl)phthalate		330	10	117-81-7
Chrysene		330	10	218-01-9
Di-n-octylphthalate	CCC	330	10	117-84-0
Benzo(b)fluoranthene		330	10	205-99-2
Benzo(k)fluoranthene		330	10	207-08-9
Benzo(a)pyrene	CCC	330	10	50-32-8
Indeno(1,2,3-cd)pyrene		330	10	193-39-5
Dibenz(a,h)anthracene		330	10	53-70-3
Benzo(g,h,i)perylene		330	10	191-24-2

[a]CCC-Calibration Check Compound
[b]SPCC-System Performance Check Compound

Note: Medium soil/sediment contract required detection limits are 60 times the individual low soil/sediment CRDL and medium water contract required detection limits are 100 times the individual low water CRDL.

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SOURCE: Wolf, J.S. et al 1986.