

**COMPENDIUM
OF
ORD AND OSWER
DOCUMENTS
RELEVANT TO RCRA CORRECTIVE ACTION**

**U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF SOLID WASTE
WASTE MANAGEMENT DIVISION**

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PREFACE

This document was prepared by NUS Corporation, Gaithersburg, MD, for the Waste Management Division, Office of Solid Waste, under Contract No. 68-01-7310. Most of the information in the cited documents addresses technical aspects of corrective or remedial actions. However, several CERCLA documents also focus on procedural aspects of program implementation. Information intended for managing the overall CERCLA process may not be applicable in the RCRA enforcement/permitting context. Also, some technical documents were prepared a number of years ago, and Agency policy contained in those documents may not reflect current policy. Therefore, documents listed in this compendium should be used only for their technical information.

INTRODUCTION

Throughout the past decade several Offices within the U.S. Environmental Protection Agency (EPA) have been involved in hazardous waste management technologies research, remedial action at chemically contaminated sites, and regulatory development for permitting hazardous waste management facilities. The primary offices involved in these activities include the Office of Research and Development (ORD) and the Office of Solid Waste and Emergency Response (OSWER). During this period, substantial knowledge and experience has been gained relevant to the applicability of remedial action technologies in various environmental settings.

Currently, OSWER is developing regulations on corrective action for solid waste management units §3004(u) of the Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA). The Corrective Action program consists of three primary phases: 1) the RCRA Facility Assessment (RFA), which is aimed at identifying known and suspected releases of hazardous wastes or hazardous constituents to the environment; 2) the RCRA Facility Investigation (RFI), which consists of media-specific field investigations to characterize the nature, extent and rate of contaminant migration through the various environmental media; and 3) Corrective Measures Study/Implementation.

This latter phase, generally termed Corrective Measures, consists of actions undertaken by both facility owners or operators and regulatory agencies aimed at selecting and implementing appropriate remedies at facilities subject to RCRA permitting requirements, which have contaminant releases of concern. Detailed regulations and guidance for implementing this phase are currently being prepared by OSWER.

The purpose of this summary of ORD and OSWER documents relevant to RCRA corrective action is to provide Regional and State regulatory personnel and facility owners or operators with a concise overview of the available guidances and technical reports on remedial action technologies, site assessment, health assessment, construction techniques and procedures, costing techniques, and quality assurance/quality control procedures. The purpose, scope and technical approach of 55 separate documents have been summarized. Also, the applicability

of each document to RCRA corrective measures implementation has been evaluated. Copies of the complete documents listed in this compendium may be obtained at the addresses and telephones numbers given below:

- ORD published documents can be obtained through the ORD Publications Department at:

U.S. EPA
ORD Publications
Cincinnati, OH 45268
(513) 569-7562 (commercial)
or 684-7562 (FTS)

Requesters should have correct publication numbers (and titles, if known) for 600 and 540 series documents. Three or fewer documents may be requested by phone. Written requests may also be sent to the above address, particularly when ordering more than three documents.

- Written requests for OSWER/OERR guidance documents and directives (and OWPE documents related to CERCLA) can be made through the Superfund Docket at:

U.S. EPA
Superfund Docket (WH-548D)
401 M Street, S.W.
Washington, D.C. 20460

Fewer than 5 documents can be requested by phone at (202) 382-3046 (commercial) or 382-3046 (FTS).

- OSWER/OSW guidance documents and directives (and OWPE documents related to RCRA) can be obtained through the RCRA Docket at:

U.S. EPA
RCRA Docket (WH-562)
401 M Street, S.W.
Washington, D.C. 20460.

Inquiries for 5 or fewer items may also be made by phone at (202) 475-9327 (commercial) or 475-9327 (FTS).

- Several documents also have designated National Technical Information Service (NTIS) numbers. These documents may be obtained at:

NTIS
5285 Port Royal Road
Springfield, Virginia 22165

In addition to the 55 documents included in this Compendium, the various EPA Offices have developed supplementary technical guidances. In October, 1987 OSWER issued a Hazardous Waste Bibliography which classifies the various documents into four separate lists which distinguish the documents' utility and currency. All documents in the "A Prime" and "A" lists (i.e., those documents which are considered to be the most frequently consulted and the most critical to the program) which have not been included in this Compendium have been listed in Appendix A. For further information on these documents the reader should consult the Hazardous Waste Bibliography.

Table 1-1 lists the documents included in this compendium, classified in the following categories:

- Remedial Action Technical Guidance: Multi-media;
- Remedial Action Technical Guidance: Media-specific;
- Site Assessment and Health Assessment;
- Construction Techniques/Procedures;
- Costing Techniques;
- Quality Assurance/Quality Control; and
- Program Guidance Documents.

Table 1-1 ORD and OSWER Documents Relevant to RCRA Corrective Action (Page 1 of 3)

Category	Document Title	Issuing Office	Page
Remedial Action Technical Guidance: Multi-Media	Mobile Treatment Technologies for Superfund Wastes	OSWER/OERR	8
	Guidance Document for Cleanup of Surface Tank and Drum Sites	OSWER/OERR	10
	Guidance Document for Cleanup of Surface Impoundment Sites	OSWER/OERR	12
	Modeling Remedial Actions at Uncontrolled Hazardous Waste Sites	OSWER/OERR/ ORD	14
	Slurry Trench Construction for Pollution Migration Control	ORD/HWERL	16
	Compatability of Grouts with Hazardous Wastes	ORD/HWERL	18
	Systems to Accelerate In-situ Stabilization of Waste Deposits	ORD/HWERL	20
	Corrective Action Technology Bibliographical Database	OSWER/OSW	22
	Remedial Response at Hazardous Waste Sites	OSWER/OERR	23
	Drum Handling Practices at Hazardous Waste Sites	ORD/HWERL	25
	Handbook for Evaluating Remedial Action Technology Plans	ORD/MERL	27
	RCRA Corrective Action Interim Measures	OSWER/OWPE	29
Remedial Action Technical Guidance: Media-Specific			
- Groundwater	Leachate Plume Management	OSWER/OERR	32
	Management of Hazardous Waste Leachate	OSWER/OSW/ MERL	34
	Corrective Measures for Releases to Ground Water from Solid Waste Management Units	OSWER/OSW	36
	Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites	OSWER/OERR	38
	Corrective Action Technologies (CORRACT TEC)	OSWER/OSW	40
- Surface Water	Discharge of Wastewater from CERCLA Sites into POTWs	OSWER/OERR	42

Table 1-1 ORD and OSWER Documents Relevant to RCRA Corrective Action (Page 2 of 3)

Category	Document Title	Issuing Office	Page
	Corrective Measures for Releases to Surface Water	OSWER/OSW	43
- Soils	Treatment of Contaminated Soils with Aqueous Surfactants	ORD/HWERL	45
	Handbook for Stabilization/Solidification of Hazardous Waste	ORD/HWERL	47
	Corrective Measures for Releases to Soil from Solid Waste Management Units	OSWER/OSW	49
	Review of In-place Treatment Techniques for Contaminated Surface Soils. Volume 1-- Technical Evaluation	ORD/HWERL	51
	Review of In-place Treatment Techniques for Contaminated Surface Soils. Volume 2-- Background Information for In-situ Treatment	ORD/HWERL	53
	Evaluating Cover Systems for Solid and Hazardous Waste	OWWM/ORD/ MERL	55
- Air	In-Situ Methods to Control Emissions from Surface Impoundments and Landfills	ORD/HWERL	57
	Technical Guidance for Corrective Measures- Determining Appropriate Technology and Response for Air Releases	OSWER/OSW	59
- Subsurface Gas	Technical Guidance for Corrective Measures: Subsurface Gas	OSWER/OSW	61
Site Assessment and Health Assessment	Guidance on RI Under CERCLA	OERR/ORD/ OWPE	64
	Superfund Public Health Evaluation Manual	OSWER/OERR	66
	Superfund Exposure Assessment Manual	OSWER/OERR	68
	Endangerment Assessment Handbook	OSWER/OWPE	70
	Uncontrolled Hazardous Waste Site Ranking System (A Users Manual)	OSWER/OERR	73
Construction Techniques/Procedures	Field Standard Operating Procedures (FSOP)	OSWER/OERR	76
	Occupation Safety and Health Technical Assistance and Enforcement Guidelines for Superfund	OSWER/OERR	78
Costing Techniques	Remedial Action Costing Procedures Manual	OSWER/OERR	80
	Removal Cost Management Manual	OSWER/OERR	82

Table 1-1 ORD and OSWER Documents Relevant to RCRA Corrective Action (Page 3 of 3)

Category	Document Title	Issuing Office	Page
QA/QC Guidance Documents	Quality Assurance/Field Operations Methods Manual	OSWER/OERR	84
	Data Quality Objectives for Remedial Response Activities	OSWER/OERR/ OWPE	86
	User's Guide to the Contract Laboratory Program	OSWER/OERR	88
Program Guidance Documents	RCRA Corrective Action Plan	OSWER/OWPE	91
	Guidance on Feasibility Studies Under CERCLA	OERR/OWPE	94
	40 CFR Part 300 (National Contingency Plan)	OSWER/OERR	97
	Remedial Action at Waste Disposal Sites	OSWER/OERR	99
	Superfund Remedial Design and Remedial Action Guidance	OSWER/OERR	101
	Community Relations in Superfund: A Handbook	OSWER/OERR	103
	Superfund Federal-Lead Remedial Project Management Handbook	OSWER/OERR	105
	Superfund State-Lead Remedial Project Management Handbook	OSWER/OERR	107
	State Participation in the Superfund Remedial Program	OSWER/OERR	109
	Current Remedial Action Program in Support of Superfund	ORD/HWERL	111
	Policy on Floodplains and Wetlands Assessments	OSWER/OERR	113
	Participation of Potentially Responsible Parties in Development of RIs and FSs	OSWER/OWPE	115
	Guidance Memorandum on Use and Issuance of Administrative Orders Under Section 106(a) of CERCLA	OSWER/OWPE	117
	Preparation of Decision Documents for Approving Fund-Financed and PRP Remedial Actions Under CERCLA	OSWER/OWPE	119
	Superfund Strategy	OTA	120

Remedial Action Technical Guidance: Multi-Media

A total of 12 multi-media remedial action technical guidance documents have been reviewed and summarized with respect to their applicability to the RCRA corrective measures program. Generally, these documents would be especially useful during the evaluation and selection of potential corrective measures. The documents describe various corrective measure technologies which can be implemented during corrective measures activities, including mobile treatment technologies, slurry trench construction, and in-situ waste stabilization. These summaries follow.

Guidance Document Name:

Mobile Treatment Technologies for Superfund Wastes

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, September 1986

Environmental Media Covered:

Soil, air, ground water, surface water

Purpose of the Guidance Document:

- Provides an overview of currently and potentially available mobile treatment technologies for use on Superfund sites.
- Discusses the capabilities and limitations of five broad treatment categories, and specific technologies within each category.

Scope of the Guidance Document:

- Intended to provide project planners, on-scene coordinators, and remedial project managers with information on the applicability and capabilities of mobile treatment as an alternative to land disposal. Would be most useful during the feasibility study phase of a Superfund remedial action.

Technical Approach:

- Technologies for thermal treatment, immobilization, chemical treatment, physical treatment, and biological treatment are discussed. Each technology description includes
 - Process description
 - Waste type handled
 - Restrictive waste characteristics
 - Required onsite facilities/capabilities
 - Environmental impacts
 - Costs

- Commercial applications

Comparison with Relevant Documents:

- Provides a more detailed discussion than does the Superfund Strategy (U.S. OTA, 1985) on the waste types (including particular chemicals) for which each treatment process can be used. Also discusses required onsite capabilities (such as electrical and water supplies or pumps) for each mobile technology

Applicability to RCRA Corrective Measures:

- Would provide information on mobile treatment technologies to be used as an alternative to land disposal or permanent on-site treatment units.
- Most useful during the Corrective Measures Study (CMS) of a RCRA Corrective Action.

Guidance Document Name:

Guidance Document for Cleanup of Surface Tank and Drum Sites

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, May 1985

Environmental Media Covered:

Does not specifically address any environmental media. Primary focus is containerized waste treatment.

Purpose of the Guidance Document:

- To provide a concise description of the necessary steps to implement surface remedial actions for the cleanup of surface tanks and drums within the provisions of the National Contingency Plan.
- Designed to be used under the direction of any engineer or scientist experienced in hazardous waste remedial projects.

Scope of the Guidance Document:

- Provides guidance for conducting a limited remedial investigation (RI) and a limited feasibility study (FS) (a limited RI refers to an investigation of one problem area or source of contamination at a facility, within a relatively short time period and a limited FS corresponds to a limited RI).
- Provides general guidance on the basic approach to development of contracts for remedial actions at tank and drum sites.
- Presents a generic process for choosing treatment technologies for uncontrolled tank and drum sites.

Technical Approach:

- Flow charts are used to present a logical sequence of decisions and activities for the implementation of remedial actions.
- Section 2.0 reviews the steps to conduct an RI to estimate the characteristics and quantities of wastes stored in above ground tanks and drums.

- Section 3.0 presents steps for the evaluation and recommendation of a cost-effective and environmentally sound remedial alternative for wastes stored in drums and tanks.
- Section 4.0 reviews typical remedial design and remedial action issues that may be unique to tank and drum sites.

Comparison with Relevant Documents:

- Document is designed to be used in conjunction with EPA's guidance documents on conducting remedial investigations: Guidance on Remedial Investigations under CERCLA (May 1985), and Guidance on Feasibility Studies under CERCLA (May 1985).

Applicability to RCRA Corrective Measures:

- Since document addresses only containerized waste treatment, it would be most useful in outlining the special considerations required for implementing corrective measures for RCRA tank storage units.

Guidance Document Name:

Guidance Document for Cleanup of Surface Impoundment Sites

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, June 1986

Environmental Media Covered:

Soil, ground water

Purpose of the Guidance Document:

- To provide a concise definition of the necessary steps to implement surface remedial actions for the cleanup of surface impoundments under CERCLA.

Scope of the Guidance Document:

- Provides a systematic approach for conducting a limited remedial investigation (RI) and a limited feasibility study (FS) at NPL sites having one or more surface impoundments.

Technical Approach:

- Presents a classification scheme designed to evaluate the complexity of a surface impoundment site, which will determine the required scope of the limited RI. This classification scheme is based on:
 - Depth to ground-water table
 - Integrity of surface impoundment
 - Permeability of soils
- Discusses the four main components of a limited RI in terms of their purpose, techniques, and limitations. Steps for a limited RI are outlined in a flow diagram.
- Provides guidance for evaluation and selection of an appropriate remedy, either temporary or final.

Comparison with Relevant Documents:

Designed to be used in conjunction with EPA's guidance documents on conducting remedial investigations and feasibility studies, e.g., Guidance on Remedial Investigations Under CERCLA (EPA, 1985).

Applicability to RCRA Corrective Measures:

- Useful in evaluating potential corrective measures for releases from surface impoundments.

Guidance Document Name:

Modeling Remedial Actions at Uncontrolled Hazardous Waste Sites

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response, and Office of Research and Development

Status:

Final, April 1985

Environmental Media Covered:

Surface water, ground water and soil; air and fugitive dust emissions are discussed peripherally, but the reader is referred to other documents for a detailed discussion of these media.

Purpose of the Guidance Document:

- Provides guidance on the selection and use of models for the purpose of evaluating the effectiveness of remedial actions at uncontrolled hazardous waste sites.

Scope of the Guidance Document:

- Document most useful in the feasibility study portion of a Superfund remedial action.
- Provides guidance to state and regional staff on the need for, and the selection and use of analytical and numerical methods for modeling remedial actions.
- Addresses modeling assumptions and limitations, required model dimensionality, resource availability, and data needs.

Technical Approach:**Volume 1: Selection of Models for Remedial Assessment**

- Provides model selection methodology based on flow charts and matrices. Guide for state or regional staff in assessing the need for predictive models at uncontrolled hazardous waste sites.

Volume 2: Simplified Methods for Subsurface and Waste Control Actions

- Compilation of analytical and semi-analytical methods for evaluating subsurface and waste control remedial actions. Addresses model assumptions and limitations.

Volume 3: Numerical Modeling of Surface, Subsurface, and Waste Control Actions

- Guidance for use of numerical models for sites where more detailed analyses are required and where sufficient resources are available.

Volume 4: Analytical and Numerical Models for the Evaluation of Remedial Actions in Surface Water

- Guidance for modeling remedial actions at sites with surface water contamination.

Comparison with Relevant Documents:

Broader in applicability and interpretation than other remedial action technical guidances. Numerical and analytical modeling techniques could be applied to a variety of remedial action techniques and environmental media.

Applicability to RCRA Corrective Measures:

- Would be useful in the preliminary stages of a CMS, in order to evaluate which models are appropriate to predict contaminant transport, and to predict the effectiveness of proposed corrective measures.

Guidance Document Name:

Slurry Trench Construction for Pollution Migration Control

Originating Office:

U.S. EPA, Office of Research & Development, Hazardous Waste Engineering Research Laboratory

Status:

Final, February, 1984

Environmental Media Covered:

Ground water

Purpose of the Guidance Document:

- To provide reviewers of remedial action plans with the necessary background material to evaluate portions of the plan dealing with pollution migration control slurry walls.

Scope of the Guidance Document:

- Discusses early development and use of slurry trench construction techniques.
- Describes:
 - What types slurry walls can be expected to help control pollution migration.
 - Current theories regarding the functions of bentonite slurries and various backfill materials.
 - Typical slurry wall configurations.
 - Other slurry wall configurations.
 - Other remedial measures appropriate for use in conjunction with slurry walls.
 - Procedures for planning a slurry wall configuration.

Technical Approach:

- Discusses properties and performance of 3 primary types of slurries: Bentonite, Soil-Bentonite, Cement-Bentonite.
- Describes vertical and horizontal slurry wall configurations.
- Discusses associated remedial measures and practices, such as ground-water pumping, collection and drainage systems, and surface sealing.

- Describes types and extent of site investigation and characterization necessary to determine feasibility of using a slurry wall, including:
 - physical constraints
 - subsurface investigations
 - wastes and leachates
 - compatibility testing
- Describes slurry wall design and construction techniques.
- Discusses the need for and requirements of a slurry wall monitoring and maintenance program.
- Itemizes cost elements of installing a slurry wall.
 - unit cost
 - construction activities
 - materials
 - equipment

Comparison with Relevant Documents:

Focus of document is on traditional (i.e., construction industry) application and designs for slurry walls, as compared with Compatibility of Grouts with Hazardous Wastes (EPA, 1984), which discusses the known effects of chemical groups commonly found in landfill leachate on set time and durability of common slurries or grouts.

Applicability to RCRA Corrective Measures:

- Would be useful during study and selection of potential corrective measures, and during development of corrective measures design.
- Describes appropriate situations for use of slurry walls, properties and performance of slurry walls, and the need for monitoring and maintenance of various types of slurry walls.

Guidance Document Name:

Compatibility of Grouts with Hazardous Wastes

Originating Office:

U.S. EPA, Office of Research & Development, Hazardous Waste Engineering Research Laboratory

Status:

Final, January 1984

Environmental Media Covered:

No direct discussion of any environmental medium.

Purpose of the Guidance Document:

- To compile data on the compatibility and durability of grouts in the presence of hazardous wastes and leachates, and to summarize the test procedures available to measure grout durability.

Scope of the Guidance Document:

- Presents the known effects of chemical groups commonly found in landfills on the setting time and durability of each grout in a soil matrix.
- Describes the lab tests that should be performed to establish the compatibility of chemicals with grouts.
- Would be most useful during the feasibility study and remedial investigation stages of a Superfund action.

Technical Approach:

- Discusses 12 kinds of grouts in terms of:
 - Physical and chemical properties
 - Reaction theory
 - Known chemical compatibility
- Uses a series of matrices to present the known and predicted effects of different chemical groups on set time and durability of the various grouts currently in use.
- Describes the lab tests that should be performed to establish the compatibility of chemicals with grouts, including a very general discussion of advantages, disadvantages, and sources of error associated with different testing methods.

Comparison with Relevant Documents:

This document provides the guidance necessary to determine waste/slurry compatibility through treatability studies as compared with Slurry Trench Construction for Pollution Migration Control, which contains guidance for traditional slurry wall design and construction.

Applicability to RCRA Corrective Measures:

- Would provide guidance for the design of a remedy selected during a CMS, in particular, would provide a methodology for performing a treatability study to determine waste/grout compatibility for a particular corrective measure.

Guidance Document Name:

Systems to Accelerate In-Situ Stabilization of Waste Deposits

Originating Office:

U.S. EPA, Office of Research & Development, Hazardous Waste Engineering Research Laboratory

Status:

Final, September, 1986

Environmental Media Covered:

Ground Water, Soil

Purpose of the Guidance Document:

- Provides the essential elements of in-situ waste stabilization methods
 - Selection of a chemical or biological agent which can react with and stabilize the waste
 - Method for delivery of the reactant to the deposit
 - Method for recovery of the reaction products or mobilized wastes

Scope of the Guidance Document:

- Report is a guidance document with respect to potential technologies for in-situ waste stabilization as they currently exist, i.e., in their conceptual or developmental stage.
- Presents methodology for selection of delivery and recovery systems.
- Would be useful during the remedial investigation and feasibility study stages of a Superfund action.

Technical Approach:

- Briefly describes several delivery/recovery systems in terms of the hydrogeologic/soil features, including depth of the waste deposit from the surface and depth to the water table, that would give preference to that method. Quantitative methods are described for determining the hydrogeologic parameters.
- Gives information taken from the literature, reports on demonstration studies, and personal communications on:
 - Biodegradation methods
 - Surfactant assisted flushing

- Hydrolysis
- Chemical oxidation
- Provides guidance on the use of stabilization technologies at specific sites.

Comparison with Relevant Documents:

Similar in scope to Handbook for Stabilization/Solidification of hazardous Waste and Review of In-Place Treatment Techniques for Contaminated Surface Soils, Volumes 1 and 2. Although similar in methodology to this guidance document, the Handbook for Stabilization/Solidification of Hazardous Waste, is not limited to in-place stabilization techniques. Review of In Place Treatment Techniques for Contaminated Surface Soils, Volumes 1 and 2, provides the most detailed discussion of the soil and waste characteristics that affect contaminant transport and fate.

Applicability to RCRA Corrective Measures:

- Would be useful during the CMS.
- Would have limited applicability for corrective measures implementation, although document is more geared toward the planning stages of a RCRA Corrective Action.

Guidance Document Name:

Corrective Action Technology Bibliographical Database

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Solid Waste

Status:

Draft, July 30, 1987

Environmental Media Covered:

N/A

Purpose of the Guidance Document:

To provide EPA permit writers with a resource for locating and assessing technical information on Corrective Action Technologies (CAT).

Scope of the Guidance Document:

Describes how to access the data base.

Technical Approach:

Describes search techniques

Comparison with Relevant Documents:

Unique in Scope.

Applicability to RCRA Corrective Measures:

- Provides information identifying current articles and reports which provide technical data on various CATs.

Guidance Document Name:

Remedial Response at Hazardous Waste Sites

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, March, 1984

Environmental Media Covered:

None

Purpose of the Guidance Document:

For use by government and industry personnel involved in selection, evaluation, and design of remedial response actions

- To provide an understanding of the remedial process so that future response actions can be developed and implemented in the most efficient way possible.
- To provide a standard of comparison when evaluating or deciding on response actions for sites with similar problems.
- To identify cleanup technologies which may warrant further research.
- To quantify and document the extent and type of remedial response actions on a nationwide basis.
- To develop data to aid in cost recovery action promulgated by EPA.

Scope of the Guidance Document:

Identifies and assesses the various types of site response activities which have been implemented, are in progress, or have been proposed to date at uncontrolled hazardous waste sites across the United States.

Technical Approach:

- Describes the methodology used for the nationwide survey.
- Discusses how the sites were chosen for detailed case studies.
- Analyzes results of the survey.

- Analyzes the costs of responses and the institutional frameworks for decision making.
- Contains findings and recommendations based on the survey.

Comparison with Relevant Documents:

Provides guidance for, and documentation of, the methodology used in the CERCLA remedial process that is broader than that contained in other guidance documents, e.g., Handbook for Evaluating Remedial Action Technology Plans.

Applicability to RCRA Corrective Measures:

- Provides an understanding of the CERCLA remedial process so that future response RCRA actions can be developed and implemented in the most efficient way possible.
- Provides a standard of comparison when evaluating or deciding on response actions for RCRA sites with similar problems.

Guidance Document Name:

Drum Handling Practices at Hazardous Waste Sites

Originating Office:

U.S. EPA, Office of Research and Development, Hazardous Waste Engineering Research Laboratory

Status:

Final, August 1986

Environmental Media Covered:

Surface water, ground water

Purpose of the Guidance Document:

- To provide technical guidance on planning and implementing safe and cost-effective response actions applicable to hazardous waste sites containing drums.

Scope of the Guidance Document:

- Presents procedures and methods for implementing cost-effective response actions applicable to drum problems requiring one or more of the three response categories outlined in the National Contingency Plan
 - Removal
 - Surface Cleanup
 - Subsurface remedial action
- Useful to on-scene coordinators, Federal, State, and local officials and private firms that plan and implement response actions at sites containing drums.

Technical Approach:

- Information is presented on the applications and limitations of the following remedial measures for controlling or containing migration of wastes:
 - Surface capping
 - Surface water controls
 - Ground-water pumping
 - Subsurface drains
 - Slurry walls
 - In situ treatment technologies

- Each drum removal operation is discussed in terms of
 - Technical feasibility
 - Health and safety procedures
 - Methods for protecting the environment and public welfare
 - Cost factors
- Describes steps and methodology for
 - Drum location and inventory
 - Drum excavation
 - Drum staging
 - Drum opening
 - Waste consolidation/recontainerization
 - Interim waste storage and transport

Comparison with Relevant Documents:

Only guidance document specifically addressing drum handling techniques.

Applicability to RCRA Corrective Measures:

- Useful in evaluating potential remedial technologies to address contaminant releases from drum storage units.

Guidance Document Name:

Handbook for Evaluating Remedial Action Technology Plans

Originating Office:

U.S. EPA, Office of Research and Development, Municipal Environmental Research Laboratory

Status:

Draft, August, 1983

Environmental Media Covered:

Ground water, surface water, contaminated soil, air

Purpose of the Guidance Document:

- Provides an outline of technical information that potentially could be used to evaluate long term remedial action plans for controlling or treating wastes or leachates at uncontrolled hazardous waste sites. Intended audience includes those involved in the review of preliminary engineering reports on formal designs of remedial actions at the waste sites.

Scope of the Guidance Document:

- Contains information on over 50 remedial action technologies. A brief description, status, factors for determining feasibility and reliability, principal data requirements, and basic information for cost review are given for each technology. In addition, a general discussion of the pathways and associated remedial approaches and monitoring techniques has been included; organized by media.

Technical Approach:

- Section 2 describes general approaches to remedy problems in five media that can become contaminated by hazardous substances released at an uncontrolled site. The media are groundwater/leachate, surface water, soil, waste, and air. Sections 3 and 4 describe individual technologies and engineering methods. Section 3 describes technologies for the physical control and containment of hazardous constituents in the five media above. Section 4 describes treatment technologies for leachate, waste, and contaminated soil. Information in Section 3 and 4 is presented in the following format:
 - Description of the technology.
 - Availability of the technology.

- Feasibility and effectiveness - technical factors important in understanding and reviewing the technology.
- Major factors which determine the performance of the technology.
- Site-specific data necessary for the design of the technology.
- Information for analyzing technology cost estimates.
- Section 5 presents a general discussion of monitoring techniques for use during remedial activities and during the post-closure custodial period. A discussion of monitoring wells in the format of Sections 3 and 4 is also provided.

Comparison With Relevant Documents:

More specific in applicability than the Guidance on Feasibility Studies Under CERCLA. Unlike the FS Guidance, this document does not provide a methodology for development for remedial alternatives. However, it does provide technical evaluations of over 50 remedial action alternatives.

Applicability to RCRA Corrective Measures:

- Useful in all phases of a CMS, from preliminary consideration of a variety of treatment technologies, to evaluation of selected corrective measures. Particularly useful for Agency review of the feasibility, expected performance, design, and cost of alternatives proposed by the owner/operator in the Corrective Measures Study.
- Limited use in the implementation of corrective measures; describes monitoring techniques and post-closure custodial care.

Guidance Document Name:

Guidance on RCRA Corrective Action Interim Measures

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Waste Programs Enforcement

Status:

Final, 1987

Environmental Media Covered:

Ground water, surface water, soils, air, gas migration

Purpose of the Guidance Document:

- For use by Regional (and State) enforcement staff for developing language in RCRA §3008(h) enforcement orders for guiding the implementation of interim measures. Specific interim measures for the following types of waste management units are specified:
 - Containers
 - Surface Impoundments
 - Landfills
 - Waste Piles
 - Tanks.
- In addition, interim measures have been identified for the following media and/or pollution events:
 - Ground water
 - Surface water
 - Gas migration
 - Air Emissions.

Scope of the Guidance Document:

- Identifies and lists the various types of interim measures which have been utilized at various Superfund sites for potential use at RCRA sites.

Technical Approach:

- An implementation strategy and a set of decision criteria for use in the development of interim measures language in RCRA §3008(h) orders or permits are identified. A set of eleven questions for assisting Regional staff to review pertinent facts about the facility and to guide the decision-maker in assessing the need for interim measures is given.

- Enforcement order language is given for multiple interim measures techniques for each of the waste management units, environmental media, and pollution events listed above.

Comparison with Relevant Documents:

- The ORD and OERR Handbook on Remedial Action at Waste Disposal Sites (Handbook) provides technical information on the advantages and disadvantages of many of the techniques identified in the interim measures guidance. The Handbook also provides details on "permanent" solutions.

Applicability to RCRA Corrective Measures:

- This draft guidance is a useful listing of potential interim measures which may be implemented at RCRA facilities undergoing corrective action.
- Measures specified in a 3008(h) order should be coordinated with the Regional and/or State permit writer(s) to ensure compatibility with long-term corrective measures implementation plans.

Remedial Action Technical Guidance: Media-Specific

A total of 15 media-specific guidance documents issued by OERR, ORD, and OSWER have been included in this section. These documents are especially useful for the evaluation and selection stages of a CMS. In general, the documents by themselves do not provide adequate technical detail for corrective measures implementation. Among the remedial technologies discussed are those for contaminated ground water, surface water, soil, air, and the migration of subsurface gas. The following summaries include individual assessments of the applicability of the documents to RCRA program corrective measures implementation.

Guidance Document Name:

Leachate Plume Management

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, November 1985

Environmental Media Covered:

Ground water

Purpose of the Guidance Document:

- To provide government and industrial personnel with the means to successfully control leachate plumes from uncontrolled hazardous waste sites.

Scope of the Guidance Document:

- Provides an overview of the fundamental concepts, procedures, and technologies used in leachate plume management.

Technical Approach:

- Discusses plume dynamics:
 - Ground water flow patterns
 - Effects of leachate characteristics
- Discusses plume delineation procedures and data.
- Discusses plume control technologies.
- Discusses theory and design of ground water pumping, subsurface drains, and low-permeability barriers.

Comparison with Relevant Documents:

This document provides a more thorough treatment of the hydrogeologic factors affecting leachate flow than does Management of Hazardous Waste Leachate (SW-871), which mainly addresses leachate treatment alternatives.

Applicability to RCRA Corrective Measures:

- **Background information on theory and design of potential corrective measures to address ground-water contamination resulting from leachate plumes.**

Guidance Document Name:

Management of Hazardous Waste Leachate (SW-871)

Originating Office:

U.S. EPA, Office of Solid Waste & Emergency Response, Office of Research & Development, Municipal Environmental Research Laboratory

Status:

Final, August, 1980

Environmental Media Covered:

Leachate in ground water

Purpose of the Guidance Document:

- To provide guidance for permit officials and disposal site operators on available management options for controlling, treating, and disposing of hazardous waste leachates.

Scope of the Guidance Document:

- Provides overviews of leachate generation and leachate characteristics
- Presents alternatives for leachate treatment and disposal
- Provides broad guidance for design of a monitoring program
- In general, the document provides narrative qualitative discussions of treatment alternatives and refers the reader to other documents for the technical detail necessary for selection or implementation of a treatment alternative

Technical Approach:

- Presents a broad discussion of three hazardous waste leachate management options
 - Treatment as hazardous waste
 - Onsite management
 - Leachate treatment/disposal
- Presents a treatment process applicability matrix which rates the effectiveness of different treatment processes for different chemical waste types as good, fair, poor, or variable.

- Presents a matrix of treatment process versus residuals and gaseous emissions generated.
- Presents a flow chart of leachate treatment process selection methodology based on
 - Evaluation of leachate quality
 - Treatability studies
 - Pilot scale studies
 - Full scale studies

Comparison with Relevant Documents:

Should be used in conjunction with Leachate Plume Management, which provides a more rigorous treatment of the hydrogeologic factors affecting leachate plume development.

Applicability to RCRA Corrective Measures:

- Limited applicability. Might be useful as a bibliography of other guidance documents; however, much material contained within may be out-dated.

Guidance Document Name:

Corrective Measures for Releases to Ground Water from Solid Waste Management Units (NTIS No. PB 88-185251)

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Solid Waste

Status:

Draft final

Environmental Media Covered:

Ground water

Purpose of the Guidance Document:

- Uses technology assessments and case studies to evaluate the relative success or failure of each technology for various hydrologic settings and waste types.

Scope of the Guidance Document:

- Describes the steps involved in assessing the need for corrective measures at solid waste management units (SWMUs).
- Provides an overview of corrective measures applicable to releases to ground water at SWMUs.

Technical Approach:

- Describes the steps involved in assessing the need for corrective measures:
 - Source characterization
 - Hazardous constituent distribution
 - Fate and transport mechanisms
 - Receptor identification
 - Risk assessment
- Both source control technologies and ground-water control/treatment technologies are described in terms of:
 - Status of technology (i.e., emerging, proven)
 - Hydrogeologic/hazardous constituent applicability
 - Additional remedial measures required
 - Effectiveness

- Case study reports include:
- Site characteristics
 - Soils
 - Geology
 - Hydrology
- Releases
 - Types/causes of releases
 - Mechanisms for detection
 - Extent of contamination
- Remedial actions
 - Response
 - Success/failure

Comparison with Relevant Documents:

Part of a group of documents that addresses releases to air, surface water, ground water, and soil. By itself, this document does not provide adequate technical detail to select or implement a corrective measure. Should be used in conjunction with other technical guidances listed in this compendium.

Applicability to RCRA Corrective Measures:

- Evaluates relative success or failure for various ground-water corrective measures technologies for various hydrologic settings and waste types.

Guidance Document Name:

Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites

Originating Office:

U.S. EPA, Office of Emergency and Remedial Response, Office of Emergency and Remedial Response

Status:

Draft, October 1986

Environmental Media Covered:

Ground water

Purpose of the Guidance Document:

- Describes how to develop, evaluate, and select remedial actions for ground water remediation under the Superfund program.
- Provides guidance and key considerations to be addressed when selecting a ground water remedy during the CERCLA feasibility study of alternatives.
- Helps ensure that the most cost-effective alternative is chosen during Superfund activities.

Scope of the Guidance Document:

- Document is intended for an audience of:
 - Contractors planning and executing CERCLA remedial investigations and feasibility studies;
 - EPA Regional Project Managers responsible for quality and completeness of remedial investigations and feasibility studies; and
 - EPA Regional Project Managers and other decisionmakers responsible for selection and performance evaluation of ground-water remedial actions.
- Relevant to CERCLA remedial investigations/feasibility studies.

Technical Approach:

- Identifies the type of ground-water problems at the site including type of chemicals present and the horizontal and vertical extent of contamination.

- Remedial alternatives which remedy ground-water problems are developed from individual technologies which address the site-specific problems.
- Remediation targets for carcinogens range from 10^{-4} to 10^{-7} excess lifetime cancer risk; remediation targets for non-carcinogens are set according to applicable standards and criteria.
- Remediation targets are achieved within an acceptable period of time in the area of attainment (i.e., the area between the waste source and the boundary of the plume.) Ground water with characteristics of Class I aquifers are expected to be restored most rapidly (e.g., within one to five years).
- Ground water remediation levels must be determined before the effectiveness of remedial actions can be evaluated. Remediation levels are defined by applicable or relevant and appropriate Federal requirements.
- Choice of a remediation alternative depends upon the following criteria for evaluation:
 - Class of ground water affected: Type I, II or III;
 - Availability of alternative water supply;
 - Ability to control/monitor plume movement;
 - Future ground water uses;
 - Effectiveness of institutional controls;
 - Other health risks borne by the affected population;
 - Costs;
 - Technical effectiveness of ground-water restoration;
 - Potential for plume spreading;
 - Performance monitoring; and
 - Hydrogeologic setting.

Comparison With Relevant Documents:

- Development and evaluation of remedial actions for contaminated ground water should be performed in accordance with the "Guidance on Feasibility Studies Under CERCLA."

Applicability to RCRA Corrective Measures:

- **Would be useful in selecting, evaluating and developing appropriate corrective measures at RCRA facilities with contaminated ground water.**

Guidance Document Name:

Corrective Action Technologies Data Base (CORRACT TEC)

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Solid Waste

Status:

Operating data base available to Regions and States

Environmental Media Covered:

Ground water, surface water, soil

Purpose of the Guidance Document:

- This data base was compiled as a resource for the Regional and State permit writers to use as a reference in evaluating the viability of proposed corrective measures in Corrective Measures Studies (CMSs).

Scope of the Guidance Document:

- Technologies which have been addressed in technical and engineering journals since the mid-1960's are included in the data base. Technologies for ground water, surface water and soils remediation were included. Septic tank drainage fields and acid mine run-off were not included.

Technical Approach:

- Three components of each case study have been characterized for correlation with the users data. These include:
 - The hydrogeologic setting
 - Contaminant type and quantity
 - Technology used.

These summaries provide the user with detailed discussions of specific hydrogeologic settings, migration routes and rate of transport, effectiveness of the remedial action performed, technical specifications of the remedial technologies, and information on the monitoring network available for use in evaluating performance.

Comparison With Relevant Documents:

- The structure of the data base was partially derived from the Handbook for Evaluating Remedial Action Technology Plans (ORD), Leachate Plume Management (OSWER), and State-of-the-Art Aquifer Restoration (ORD). Case studies were identified from technical, professional and

engineering journals, Records of Decisions (ROD's) from Superfund sites, and other sources as identified.

Applicability to RCRA Corrective Measures:

- Data base designed and developed to provide a basis for comparing the viability of corrective action techniques proposed in Corrective Measures Studies (CMSs) submitted by owner/operators where available, cost data have been included to provide the user with a basis for comparing per unit costs of technology implementation.

Guidance Document Name:

Discharge of Wastewater from CERCLA Sites into POTWs

Originating Office:

U.S. EPA, Office of Solid Waste & Emergency Response, Office of Emergency and Remedial Response

Status:

Final, April 15, 1986

Environmental Media Covered:

Surface Water

Purpose of the Guidance Document:

- To highlight technical and policy concerns expressed in meetings between EPA and the Association of Metropolitan Sewerage Authorities (AMSA) regarding the use and selection of POTWs for CERCLA wastewater.

Scope of the Guidance Document:

- Discuss proposed criteria on use and selection of POTWs for CERCLA wastewater.

Technical Approach:

- Discusses the National Pretreatment Program requirements applicable to the introduction of non-domestic wastewater into a POTW.
- Discusses points to evaluate in determining whether a POTW may accept wastewater from a CERCLA site.

Comparison with Relevant Documents:

Unique in scope.

Applicability to RCRA Corrective Measures:

- Presents considerations to evaluate prior to remedy selection where discharge of wastewater from a contaminated site into a POTW is among the alternatives.

• **Guidance Document Name:**

Corrective Measures for Releases to Surface Water
(NTIS No. PB88-185251)

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Solid Waste

Status:

Draft final

Environmental Media Covered:

Surface water

Purpose of the Guidance Document:

- Provides guidance to identify the need for corrective measures and to identify mechanisms to correct releases to surface water.

Scope of the Guidance Document:

- Provides description of the steps necessary in:
 - Assessing the need for corrective measures
 - Control of sources of contamination
 - Technologies for offsite containment, recovery, and treatment
- Uses case studies to demonstrate how to select and implement corrective measures for releases to surface waters.

Technical Approach:

- Provides a narrative, tabular, and checklist approach to:
 - Assessing the need for corrective measures
 - Source control
 - Offsite corrective measures
- Case studies are summarized in terms of
 - Types of releases
 - Waste types
 - Response action

Comparison with Relevant Documents:

Part of a group of documents that addresses releases to air, surface water, ground water and soil. By itself, this document does not provide adequate technical detail to select or implement a corrective action. Should be used in conjunction with other technical guidances in this Compendum.

Applicability to RCRA Corrective Measures:

- Provides guidance for the selection and implementation of corrective measures to address releases to surface water under RCRA, although this document by itself would not provide adequate technical detail for corrective measures selection or implementation.

Guidance Document Name:

Treatment of Contaminated Soils with Aqueous Surfactants

Originating Office:

U.S. Office of Research and Development, Hazardous Waste Engineering Research Laboratory

Status:

Interim, November 1985

Environmental Media Covered:

Soil, ground water

Purpose of the Guidance Document:

- Reports the results of bench-scale treatability studies conducted to determine if the efficiency of water washing of contaminated soils could be enhanced through the use of aqueous surfactants.
- Makes limited recommendations for the selection of such a surfactant for the in situ treatment of contaminated soils.

Scope of the Guidance Document:

- Uses a traditional research approach to evaluate methods for the in situ treatment of contaminated soils.
- Would be most useful as a tool for further research on in situ treatment methods, or full-scale studies at Superfund sites.

Technical Approach:

The reports of the study include:

- Results of a literature search on methods for in situ treatment of soils contaminated with different waste types.
- Results of the laboratory study.
- Recommendations for selecting a surfactant for in situ treatment of contaminated soils.
- Recommendations for further studies.

Comparison with Relevant Documents:

Unlike other guidance documents (e.g., Mobile Treatment Technologies for Superfund Wastes (EPA, 1986)), this report is not a guide for selecting the best treatment technology for contaminated soils. Rather, it is a tool for conducting full-scale studies for in situ treatment at Superfund sites.

Applicability to RCRA Corrective Measures:

- Does not have proven applicability for full-scale corrective actions to address soil contamination at RCRA sites. Would be most useful as a tool for further research.

Guidance Document Name:

Handbook for Stabilization/Solidification of Hazardous Waste

Originating Office:

U.S. EPA, Office of Research and Development, Hazardous Waste Engineering Research Laboratory

Status:

Final, June, 1986

Environmental Media Covered:

Soil/sediment

Purpose of the Guidance Document:

- Designed to provide designers and reviewers of remedial action plans with information necessary to judge the feasibility of stabilization/solidification technology for the control of pollutant migration from land-based hazardous waste disposal units.

Scope of the Guidance Document:

- Discusses the general chemical systems involved in stabilization/solidification technologies in order to provide the background information necessary for selection of the optimum treatment option for a specific waste.
- Addresses design requirements, and preliminary cost estimating for selected stabilization/solidification alternatives.
- Would be most useful during the feasibility study portion of a Superfund action.

Technical Approach:

- Based on field surveys, four stabilization/solidification scenarios are developed and compared in terms of
 - Project sequencing
 - Equipment requirements
 - Costs
 - Special safety and environmental concerns
 - Possible modifications of treatment alternatives to reduce cost

- Discusses several waste stabilization/solidification techniques in terms of:
 - Chemical basis for technology and commercial formulations in common use
 - Waste and site characterizations appropriate for treatment process evaluation
 - Protocols for bench-scale testing
 - Sampling and testing protocols for assessing containment efficiency
 - Final site cleanup and monitoring

Comparison with Relevant Documents:

Focus is on methodology for corrective measures selection, as in Systems to Accelerate In-Situ Stabilization of Waste Deposits; however, this document addresses both in-situ and offsite waste stabilization.

Applicability to RCRA Corrective Measures:

- Monitoring and testing protocols would be useful in evaluating stabilization and solidification as an appropriate remedial alternative.

**APPENDIX A - "A PRIME" AND "A" LIST DOCUMENTS ON THE OSWER HAZARDOUS WASTE BIBLIOGRAPHY
NOT INCLUDED IN THIS COMPENDIUM ***

CATEGORY	DOCUMENT TITLE	ISSUING OFFICE	ORDERING INFORMATION
Remedial Action Technical Guidance: Multi-Media	Directory of Commercial Hazardous Waste Treatment and Recycling Facilities	EPA/OSW, Washington, D.C.	EPA Report #530/SW85-019 NTIS REF. #PB-86-178-431
	Guidance Manual for Research, Development and Demonstration Permits under 40 CFR sect 270.65	EPA/OSW, Washington, D.C.	EPA Report #530-SW-86/008 NTIS REF. #PB-86-229-192 OSWER DIRECTIVE 952700.1A
	Practical Guide--Trial Burns for Hazardous Waste Incinerators: Project Summary	EPA/OSWER/HWERL Cincinnati, OH	EPA Report #600/2-86-050 NTIS REF. #PB-86-190-246/AS
	Prohibition on the Placement of Bulk Liquid Hazardous Waste in Landfills--Statutory Interpretive Guidance	EPA/OSW, Washington, D.C.	NTIS REF. #PB-86-212-271
	Treatment Technology Briefs: Alternatives to Hazardous Waste Landfills	EPA/ORD/HWERL, Cincinnati, OH	EPA Report #600/9--86-017 NTIS REF. #PB-87-110-680
Site Assessment and Health Assessment	Design and Development of Hazardous Waste Reactivity Testing Protocol	EPA/ORD/HWERL, Cincinnati, OH	EPA Report #600/2-84-057 NTIS REF. #PB-84-158-807
	Handbook, Remedial Action at Waste Disposal Sites, Revised	EPA/OSWER/OERR/HWERL Cincinnati, OH	EPA Report #625/6-85-006 NTIS REF. #PB-87-201-034 OSWER DIRECTIVE 9380-0-4
	Test Methods for Evaluation of Solid Waste: Physical/Chemical Methods 3rd Edition	EPA/OSWER, Washington, D.C.	EPA Report #SW-846 GPO Reference #955-001-00000-1
	Geophysical Methods for Location Abandoned Wells	EPA/ORD/EMSL, Las Vegas, NV	EPA Report #600/4-84-065 NTIS REF #PB-84-212-711
	Geophysical Techniques for Sensing Buried Wastes and Waste Migration	EPA/ORD/EMSL, Las Vegas, NV	EPA Report #600/7-84-064 NTIS REF. #PB-84-198-449

APPENDIX A - "A PRIME" AND "A" LIST DOCUMENTS ON THE OSWER HAZARDOUS WASTE BIBLIOGRAPHY

NOT INCLUDED IN THIS COMPENDIUM * (Continued)

CATEGORY	DOCUMENT TITLE	ISSUING OFFICE	ORDERING INFORMATION
Site Assessment and Health Assessment	Practical Guide for Ground-Water Sampling	EPA/OSWER/ERL, Ada, OK	EPA Report #600/2-85-104 NTIS REF. #PB-86-137-304
	RCRA Ground-Water Monitoring Technical Enforcement Guidance Document	EPA/OSW, Washington, D.C.	EPA Report #530/SW-86-055 NTIS REF. #PB-87-107-751
	Sediment Sampling Quality Assurance User's Guide	EPA/ORD/EMSL, Las Vegas, NV	EPA Report #600/4-85-048 NTIS REF. #PB-85-233-542
	Soil Sampling Quality Assurance User's Guide	EPA/ORD/EMSL, Las Vegas, NV	EPA Report #600/4-84-043 NTIS REF. #PB-84-198-621
	Survey of Mobile Laboratory Capabilities and Configurations	EPA/ORD/EMSL, Las Vegas, NV	EPA Report #600/X-84-170
	Health Effects Assessment Documents (58 Chemical Profiles)	EPA/OERR/OHEA Cincinnati, OH	EPA Report #540/1-86-001 through 058 NTIS REF. #PB-86-134-111 AS
Construction Techniques & Procedures	Dust Control at Hazardous Waste Sites	EPA/ORD/HWERL Cincinnati, OH	EPA Report #540/2-85/003 NTIS REF. #PB-86-190-105
	Occupational Safety and Health: Guidance Manual for Hazardous Waste Site Activities	NIOSH, Cincinnati, OH	GPO Reference #(NIOSH PUB) 85-115
	Protecting Health and Safety at Hazardous Waste Sites: An Overview	CERI, Cincinnati, OH	EPA Report #625/9-85-006
	Standard Operating Safety Guides	EPA/OERR/HRSD Washington, D.C.	OSWER DIRECTIVE 9285.1-01B
	Decontamination Techniques for Mobile Response Equipment Used at Waste Sites (State-of-the-Art Survey) Final Report	EPA/ORD/HWERL, Cincinnati, OH	EPA Report #600/2-85-105 NTIS REF. #PB-85-247-021/XA

APPENDIX A - "A PRIME" AND "A" LIST DOCUMENTS ON THE OSWER HAZARDOUS WASTE BIBLIOGRAPHY

NOT INCLUDED IN THIS COMPENDIUM * (Continued)

CATEGORY	DOCUMENT TITLE	ISSUING OFFICE	ORDERING INFORMATION
Construction Techniques & Procedures	Emergency Response Procedures for Control of Hazardous Substance Release	EPA/ORD/HWERL, Edison, N.J.	EPA Report #600/D-84-023 NTIS REF. #PB-84-128-719
	Guidance Manual for Minimizing Pollution From Waste Disposal Sites	EPA/ORD/WERL, Cincinnati, OH	EPA Report #600/2-78-142 NTIS REF. #PB-268-905
	Guide for Decontaminating Buildings, Structures and Equipment at Superfund Sites	EPA/ORD/HWERL, Cincinnati, OH	EPA Report #600/2-85-028 NTIS REF. #PB-85-201-234 AS
	Superfund Removal Procedure--Revision #2	EPA/ERD, Edison, N.J.	OSWER DIRECTIVE 9360.0-03A
	Technical Guidance Document: Construction Quality Assurance for Hazardous Waste Land Disposal Facilities (Final Report)	EPA/ORD/HWERL, Cincinnati, OH	EPA Report # 530/SW-86-031 NTIS REF. #PB-87-132-825 OSWER DIRECTIVE 9427.00-3
Costing Techniques	Costs of Remedial Response Actions at Uncontrolled Hazardous Waste Sites	EPA/OSWER/WERL, Cincinnati, OH	EPA Report #600/2-82/035 NTIS REF. #PB-83-164-830
Program Guidance Documents	CERCLA Compliance with Other Environmental Statutes	EPA/OERR, Washington, D.C.	OSWER DIRECTIVE 9234.0-02
	Petitions to Delist Hazardous Wastes: A Guidance Manual	EPA/OSWER, Washington, D.C.	EPA Report #540/G-87 001 NTIS REF. #PB-85-194-488
Case Studies	Case Studies 1-23: Remedial Responses at Hazardous Waste Sites	EPA/OSWER/WERL, Cincinnati, OH	EPA Report #540/2-84-002B NTIS REF. #PB-85-121-739
	Summary Report: Remedial Response at Hazardous Waste Sites	EPA/OSWER/WERL, Cincinnati, OH	EPA Report #540/2-84-002A NTIS REF. #PB-86-121-721

* For further information see the OSWER Hazardous Waste Bibliography, October, 1987, EPA/540/1-87-001 (OSWER Directive 9380.1-02)

Guidance Document Name:

Corrective Measures for Releases to Soil from Solid Waste Management Units (NTIS No. PB88-185277)

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Solid Waste

Status:

Draft final, August, 1985

Environmental Media Covered:

Soil

Purpose of the Guidance Document:

To provide guidance and selecting corrective measures in response to a hazardous constituent release to soil.

Scope of the Guidance Document:

- Provides parameters and criteria which should be considered in selecting a particular remedial response for specific site conditions and identified compounds.
- Discusses the need for corrective measures through review of the potential for hazardous constituents released to soil to be transported to other media.
- Provides an overview of corrective measures.
- Discusses case studies where releases to soil has occurred and identifies corrective measures undertaken to clean up the soil.
- Provides recommendations for the application corrective measures to soil releases.

Technical Approach:

Describes a stepwise process for assessing the need for corrective measures

- Source characterization
- Extent of contamination
- Fate and transport
- Exposure assessment
- Hazard (toxicity) assessment and characterization

Discusses the various types of removal/containment and treatment technologies which are applicable to remediation of releases to soils

- Proven technologies: successfully used at sites to clean up hazardous wastes from soils.
- Imminent technologies: proven in the laboratory and successfully used in the field on pilot-scale studies.
- Emerging technologies: currently in the laboratory testing stage.

Reviews case studies which demonstrate how to select and implement corrective measures for releases to soils from SWMUs.

Presents recommendations on how to select and implement corrective measures.

- Includes factors to consider in selecting corrective measures for releases to soils, such as:
 - soil conditions
 - site location
 - hydrogeology
 - implementability
 - cost

Comparison with Relevant Documents:

Part of a group of documents that addresses releases to air, surface water, ground water, and soil. By itself, this document does not provide the technical detail to choose or implement a corrective action.

Applicability to RCRA Corrective Measures:

- Provides guidance for the selection and implementation of potential corrective measures in response to a contaminant release to soils, although this document by itself would not provide adequate technical detail for corrective measures selection or implementation.

Guidance Document Name:

Review of In-Place Treatment Techniques for Contaminated Surface Soils. Volume 1
-- Technical Evaluation

Originating Office:

U.S. EPA, Office of Research & Development, Hazardous Waste Engineering
Research Laboratory

Status:

Final, July, 1984

Environmental Media Covered:

Soils. Addresses ground water, surface water, and air (indirectly)

Purpose of the Guidance Document:

- Discusses the selection of the appropriate in-place treatment technology for a particular site and provides specific information on each technology.

Scope of the Guidance Document:

- Provides a narrative discussion of different in-place treatment technologies.
- Provides data for estimating costs.
- Discusses engineering practices for modifying soil properties to make in-place treatment more effective.
- Would be most useful during the Feasibility Study of a Superfund action.

Technical Approach:

- Discusses each technology in terms of:
 - Process description
 - Information requirements for technology application
 - Wastes amenable to treatment
 - Current status of technology
 - Ease of application
 - Potentially achievable levels of treatment
 - Long term reliability of the technology
 - Secondary impacts
 - Required equipment and materials

- Discusses engineering methods for increasing the effectiveness of in-place treatment by modifying the following properties of soil:
 - Oxygen content
 - Moisture content
 - Nutrient content
 - pH
 - Soil temperature

Comparison with Relevant Documents:

Volumes 1 and 2 are similar in scope to Review of In-Place Treatment Techniques for Contaminated Surface Soils; however, these volumes provide a more detailed discussion of the soil and waste characteristics that affect contaminant transport and fate.

Applicability to RCRA Corrective Measures:

- Useful in determining potential of in-situ treatment technologies to address contaminated soils at a RCRA corrective action site.
- Discussion of engineering methods for modifying soil characteristics to improve effectiveness of treatment technologies would be useful during the initial or planning stages of corrective measures implementation.

Guidance Document Name:

Review of In-Place Treatment Techniques for Contaminated Surface Soils.
Volume 2--Background Information for In-Situ Treatment

Originating Office:

U.S. EPA, Office of Research & Development, Hazardous Waste Engineering
Research Laboratory

Status:

Final, July, 1984

Environmental Media Covered:

Soils. Addresses ground water, surface water, and air indirectly.

Purpose of the Guidance Document:

- Provides background information and related chemical data to support the treatment methodology described in Volume 1.

Scope of the Guidance Document:

- Presents information on
 - Monitoring to determine treatment effectiveness.
 - Characterization of behavior and fate of hazardous constituents in soil/waste systems
 - Properties for various compounds that affect their interactions with soil
 - Adsorption
 - Degradation
 - Volatilization
- Most useful during the feasibility study and the post-closure monitoring phases of a Superfund action.

Technical Approach:

- Discusses the specific site and soil characteristics that need to be evaluated when assessing a site for in-situ treatment
 - Soil type and extent
 - Soil profile properties
 - Hydraulic properties and conditions
 - Geological and hydrogeological factors
 - Meteorological and climatological data

- Discusses one-dimensional transport models to describe the behavior of waste constituents in soil systems. These models represent a first-cut approach to ranking waste types with respect to potential mobility, and therefore treatment priority.
- Includes specific monitoring information for each medium (soil, water, and air), and cost estimates for various monitoring techniques.
- Appendix contains a data base for assessing the soil/waste interactions of individual chemicals, describing the following parameters:
 - Chemical properties
 - Adsorption parameters
 - Degradation parameters
 - Volatilization parameters

Comparison with Relevant Documents:

(See Review of In-Place Treatment Techniques for Contaminated Surface Soils, Volume 1.)

Applicability to RCRA Corrective Measures:

- Provides the technical guidance necessary to select a remedy during a CMS.
- Provides monitoring information that would be useful in evaluating effectiveness of a in-situ soil treatment technology.

Guidance Document Name:

Evaluating Cover Systems for Solid and Hazardous Waste (SW-867)

Originating Office:

U.S. EPA, Office of Water and Waste Management, Office of Research and Development, Municipal Environmental Research Laboratory

Status:

Final, September 1980

Environmental Media Covered:

Discusses soils, but only in terms of their appropriateness as cover material

Purpose of the Guidance Document:

- Describes a 36-step procedure to be used by RCRA permit evaluators, for the evaluation of permit engineering plans.

Scope of the Guidance Document:

- The 36 steps in the permit evaluation procedure fall into the following three categories:
 - Examination of data
 - Steps in cover system evaluation
 - Evaluation of post-closure plan
- Designed to provide the RCRA permit writer with a methodology for evaluating cover design, and post-closure maintenance and contingencies.

Technical Approach:

- Each data evaluation step includes
 - Step process
 - Data that should be examined and sources of such data
 - Applicant and permit evaluation responsibilities

Comparison with Relevant Documents:

Only guidance document in this Compendium specifically addressing cover systems.

Applicability to RCRA Corrective Measures:

- **Would have applicability to the implementation of a RCRA Corrective Action with respect to evaluation of cover designs, post-closure maintenance, or contingency plans.**
- **Limited applicability as a tool to evaluate cover systems as part of a proposed corrective measure.**

Guidance Document Name:

In-Situ Methods to Control Emissions from Surface Impoundments and Landfills

Originating Office:

U.S. EPA, Office of Research and Development, Hazardous Waste Engineering Research Laboratory

Status:

Final, October 1985

Environmental Media Covered:

Air

Purpose of the Guidance Document:

- Provides results of a study which included laboratory investigations and literature reviews on methods of reducing emissions of volatile organic compounds (VOCs) from surface impoundments and landfills.

Scope of the Guidance Document:

- Discusses several in situ methods for controlling VOC emissions from landfills and surface impoundments, and draws conclusions with respect to the suitability of each method under various circumstances.

Technical Approach:

- Control methods discussed are:
 - Complete enclosure of a surface impoundment.
 - Use of floating solid objects.
 - Shape modification for surface impoundments.
 - Aerodynamic modification (i.e., wind barriers).
 - Floating oil layers and surfactants.
 - Synthetic covers for landfills.
- Control methods are discussed in terms of:
 - Relevant test results (cited from the literature).

- Parameters affecting effectiveness of control method, such as its construction materials, or climate.

Comparison with Relevant Documents:

- Intermediate in applicability to Superfund actions between a scientific research report (e.g., Treatment of Contaminated Soils with Aqueous Surfactants (EPA, 1985)), and a Superfund guidance document (e.g., Mobile Treatment Technologies for Superfund Wastes (EPA, 1986)).

Applicability to RCRA Corrective Measures:

- Will be useful as background data to evaluate potential corrective measures that address VOC emissions at surface impoundments and landfills.

Guidance Document Name:

Technical Guidance for Corrective Measures -- Determining Appropriate Technology and Response for Air Releases (NTIS No. PB88-185269)

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Solid Waste

Status:

Draft final, March, 1985

Environmental Media Covered:

Air

Purpose of the Guidance Document:

- To assist EPA/State personnel in implementing RCRA corrective action provisions by providing a central source of information on air emission control technologies and techniques for hazardous waste TSDFs.

Scope of the Guidance Document:

- Describes waste management unit decision and operation practices which prevent or control vapor and particulate releases from containerized waste storage, storage tanks, surface impoundments, landfills, land treatment and waste piles.
- Discusses control technologies used in the industrial/commercial sector.

Technical Approach:

- Uses flowcharts, tables, and narrative descriptions to characterize corrective measures technologies by
 - Facility specific applicability
 - Cost effectiveness
 - Effectiveness in reducing air emissions
- Discusses corrective measures for specific facility types in terms of
 - Major causes for releases
 - Control options available
 - Advantages/disadvantages of the various control options.

Comparison with Relevant Documents:

Part of a group of documents that addresses releases to air surface water, ground water, and soil. By itself, this document does not provide the technical detail to choose or implement a corrective action.

Applicability to RCRA Corrective Measures:

- Provides guidance for the selection of potential corrective measures to address air releases, although this document by itself would not provide adequate technical detail for corrective measures selection or implementation.

Guidance Document Name:

Technical Guidance for Corrective Measures -- Subsurface Gas (NTIS No. PB88-185285)

Originating Office:

U.S. EPA, Office of Solid Waste & Emergency Response, Office of Emergency and Remedial Response

Status:

Draft final, March 28, 1985

Environmental Media Covered:

Subsurface Gas

Purpose of the Guidance Document:

- To assist in the assessment of the potential for subsurface gas generation and migration from these facilities and to describe potential corrective measures.

Scope of the Guidance Document:

- Provides an overview of factors that impact subsurface gas generation and migration.
- Provides methods to identify a subsurface gas release by the presence of specific hazardous waste constituents.
- Describes criteria for emergency situations, investigation methods and potential remedies.

Technical Approach:

- Discusses regulatory/statutory requirements
 - Concentration limits
 - Definition of a release
 - Indicator constituents
- Discusses forms of gas generation
 - Biological, chemical, physical decomposition
- Discusses barriers affecting gas migration

- Provides checklists for identifying subsurface gas releases during a preliminary assessment
- Describes subsurface sampling techniques
- Discusses data requirements for development of models to predict the migration of subsurface gas
- Discusses procedures for subsurface gas field monitoring

Comparison with Relevant Documents:

Document is unique in scope in this Compendium.

Applicability to RCRA Corrective Measures:

- Primary applicability to investigation and corrective measure phases; provides a format for subsurface gas field monitoring and for sampling of volatile organics present in subsurface gas

Site Assessment and Health Assessment

A total of 5 site assessment guidance documents have been reviewed and summarized. These documents would be most useful for the site investigation and assessment steps that would be conducted prior to a CMS. Several of the documents describe data collection and analysis techniques for assessing the potential for, types of, and degree of hazard which may result from a contaminant release. As these documents are generally more closely related to the RFA/RFI phases of corrective action than to corrective measures implementation their utility in the Corrective Measures Study will be limited. The summaries follow.

Guidance Document Name:

Guidance on Remedial Investigations under CERCLA

Originating Office:

U.S. EPA, Office of Research and Development, Office of Emergency and Remedial Response, Office of Waste Programs Enforcement

Status:

Final June, 1985 (Workgroup Currently Revising)

Environmental Media Covered:

Groundwater, surface water, air, soil

Purpose of the Guidance Document:

- Provides technical guidance to Superfund staff, contractor and potentially responsible parties on how to conduct a Remedial Investigation (RI) under CERCLA requirements.
- Describes how to characterize the extent of existing contamination and the potential for a release to soils, ground water, surface water, and air from uncontrolled hazardous waste sites on the NPL.
- Describes the interplay of the RI and FS activities during development of a response.

Scope of the Guidance Document:

- Provides guidance on NCP requirements that must be met by Regions, their contractors, and potentially responsible parties in conducting CERCLA site investigations.

Technical Approach:

- **Must be used** in conjunction with the Guidance on Feasibility Studies under CERCLA; RI guidance focuses on data collection and site characterization to provide the information required for a detailed analysis of alternatives conducted during the FS.
- Initial activities consist of collecting and evaluating existing information on site and waste characteristics, migration pathways, receptors and potential impacts on public health, welfare and the environment.
- A sampling plan is developed to determine the extent of hazardous contamination at the site and to specify field activities required for the

remedial investigation. A QA program is required to ensure that proper collection, transport, and validation procedures were used.

- Health and safety activities are utilized when any type of field work is involved. These activities are designed to protect the investigative team and the general public against chemical hazards, physical injuries, and fire.
- Site characterizations provide data to support decisions to be made in the Feasibility Study. As such, they encompass a wide variety of waste and site conditions such as physical and chemical properties of wastes, site engineering, geology, hydrogeology, surface water conditions, and atmospheric processes. Site characterization activities may include: review of existing data, geologic and hydrogeologic investigations, sampling and analysis of all media, and quantitative numerical modeling to determine fate and transport of contaminants.
- The RI guidance does not require that all three levels be completed; the process may terminate at any level provided that sufficient data have been obtained to support, at a minimum, the screening of remedial technologies and alternatives.
- The focus, data needs, and data evaluations conducted at each level of the investigation are described.

Comparison With Relevant Documents:

- The Guidance on Remedial Investigation under CERCLA was designed to be used concurrently with the Guidance on Feasibility Studies under CERCLA. The RCRA Facility Investigation (RFI) guidance describes how to conduct a site investigation which will trigger a Corrective Measures Study, where necessary.
- CERCLA RI three-level data collection process is similar to RFI two-step data collection process: Level I under RI guidance essentially the same as the collection and review of existing information in the RFI; Levels II and III problem quantification and detailed investigation in CERCLA RI similar to RFI formulation and implementation of field investigation step.
- CERCLA RI activities focus on all hazardous substances named in CERCLA Section 102 (which include the constituents regulated under RCRA, the Clean Water Act, the Clean Air Act, and others), while the RFI specifically addresses constituents listed in 40 CFR Part 261, Appendix VIII.

Applicability to RCRA Corrective Measures:

- Provides guidance for data collection and site characterization necessary prior to study and selection of appropriate corrective measures.

Guidance Document Name:

Superfund Public Health Evaluation Manual

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, October 1986

Environmental Media Covered:

All potential exposure pathways

Purpose of the Guidance Document:

- The Superfund Public Health Evaluation Manual (SPHEM) is designed to establish an institutional framework for public health evaluation at Superfund sites.
- To issue guidance on the development of health-based performance goals for remedial alternatives.

Scope of the Guidance Document:

- The SPHEM is to be used during the CERCLA RI/FS activities in order to meet the requirements of the NCP for conducting public health evaluations.
- The procedures in the SPHEM are to be used during the Feasibility Study and at sites where Endangerment Assessments are conducted pursuant to CERCLA Section 106.

Technical Approach:

- Covers agency rules, policies and guidelines as well as overview of use of indicator chemicals to assess risk.
- Procedures conform to EPA risk assessment guidelines.
- Details the use of public health assessment information in the Feasibility Study.
- Describes statutory and regulatory authorities for implementing risk assessments.

- Outlines the appropriate methods for the selection of indicator chemicals.
- Describes methods for estimating exposure point concentrations of indicator chemicals.
- Describes methods for estimating chemical intakes or exposures through the various environmental media.
- Describes the implementation of a toxicity assessment.
- Details the steps involved in risk characterization.
- Describes the development of performance goals and the analysis of risks for remedial alternatives.

Comparison With Relevant Documents:

- Designed to supplement Chapter 5 of the Guidance on Feasibility Studies under CERCLA.
- Should be used in tandem with the Superfund Exposure Assessment Manual.

Applicability to RCRA Corrective Measures:

- Has useful information on contaminant toxicity and other properties, and health assessment techniques.

Guidance Document Name:

Superfund Exposure Assessment Manual

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Draft, January 1986

Environmental Media Covered:

Air, soils, surface water, ground water

Purpose of the Guidance Document:

- The Superfund Exposure Assessment Manual (SEAM) is designed to complement the Superfund Public Health Evaluation Manual (SPHEM) by describing how to develop both quantitative and qualitative exposure information at uncontrolled waste sites to support a public health evaluation during the Feasibility Study.
- This document presents procedures for making an analysis of contaminant release, transport, and fate, and human population exposure.

Scope of the Guidance Document:

- The SEAM is to be used during the CERCLA RI/FS activities in order to meet the requirements of the NCP for conducting public health evaluations. It should be used in conjunction with the SPHEM and the Superfund Endangerment Assessment Handbook.
- The procedures in the SEAM are meant to be applied during the Feasibility Study in order to analyze the baseline, "no action" alternative.

Technical Approach:

- Presents a framework for conducting an exposure assessment based upon the following steps:
 - Contaminant release analysis: Medium-specific analysis of mass loadings of each target chemical to specific environmental media.
 - Environmental fate analysis: Description of the extent and magnitude of environmental contamination. Allows user to predict human population contact with chemicals from the site.

- Exposed populations analysis: Identification, enumeration, and characterization of those population segments likely to be exposed.
- Integrated exposure analysis: Individual exposure estimates for each exposure route (i.e., inhalation, ingestion of drinking water and/or food, dermal contact) are developed for released chemicals.
- Provides mathematical equations for predicting emissions rates from wastes to air, soils, surface water, and ground water. Also describes appropriate computer models for estimating emissions rates.
- Describes mathematical and computer modeling approaches to determining environmental fate of contaminants in air, surface water, ground water, and biotic fate pathways.

Comparison With Relevant Documents:

- The SEAM is designed to provide quantitative information on exposures at hazardous waste sites needed to conduct a Superfund public health evaluation as required in the NCP. Accordingly, the SEAM is a more detailed and comprehensive document on exposure assessments than the RCRA Environmental Impact Assessment (EIA) guidance document.
- The SEAM covers fundamentally the same media and types of release considered in the RCRA EIA guidance.

Applicability to RCRA Corrective Measures:

- Would be most useful in the facility assessment and investigation steps that would be conducted prior to a CMS.

Guidance Document Name:

The Endangerment Assessment Handbook

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Waste Programs Enforcement

Status:

Final, August 1985

Environmental Media Covered:**Purpose of the Guidance Document:**

- Provides technical and procedural guidelines for developing and conducting endangerment assessments to support administrative and judicial enforcement actions under Section 106 (a) CERCLA and Section 7003 of RCRA. The endangerment assessment process should be initiated as soon as a site is identified as an enforcement site and administrative or judicial actions are considered.
- Describes how to initiate the endangerment assessment process once a site has been identified as a CERCLA 106 or RCRA 7003 enforcement site, which may take place at any point in the overall corrective action process after site identification.

Scope of the Guidance Document:

- Developed to assist EPA Regional, State and contractor personnel in conducting and evaluating endangerment assessment, and in preparing necessary documentation that will justify the enforcement needs of each case.
- Provides the basis for the findings of fact in administrative orders, consent degrees, and complaints.

Technical Approach:

- Presents and discusses the content and recommended format for the endangerment assessment document.
 - Contaminant Identification: screens the information available on types and concentrations of hazardous substances or wastes present at the site and identifies those contaminants of concern based on their intrinsic toxicological properties, concentration and distribution, or their potential release to critical exposure routes and subsequent migration into the surrounding environment. If

sufficient information on contaminants at the site is unavailable, sampling and analysis for suspected contaminants and locations should be initiated.

- **Exposure Assessment:** Identify type and concentration of each contaminant of concern and determine the amount of each contaminant released to each environmental medium. Identify the potential exposure (transport) routes associated with each contaminant. Identify and analyze populations including human populations, fish, and wildlife populations which may be at risk. Determine the exposure levels based on frequency, mode, and magnitude of exposure to a given contaminant.
- **Toxicity Assessment:** An evaluation of adverse effects of each contaminant, doses employed, routes of administration (oral, dermal, inhalation) and quality of test data is performed to determine the toxicity profile of the contaminant. Next, a dose-response relationship is determined which estimates a quantitative risk from exposure to the contaminant of concern.
- **Risk Characterization:** A risk assessment is attained by integrating the information developed during the exposure and toxicity assessments to yield a qualitative value of risk. The final risk assessment should include a summary of the uncertainties of each component per risk, risk associated with various sub-populations, assumptions used in calculating the risks the relation between risk and an acceptable contaminant concentration level.

Comparison With Relevant Documents:

- The Endangerment Assessment Handbook (EAH) was prepared before either the Superfund Public Health Evaluation Manual (SPHEM) or the Superfund Endangerment Assessment Manual (SEAM), although the EAH references the SPHEM. The EAH was prepared to complement the information that was to be provided in these documents. Accordingly, both the SPHEM and the SEAM reference their applicability to the conduct of endangerment assessments, and should be considered consistent with each other though not identical.
- Because the EAH is designed to provide information sufficient to support an administrative order under CERCLA 106 or RCRA 7003, the information collection described is more detailed than that required under the RCRA Exposure Information Assessment (EIA) guidance. Information collected using the EIA guidance must only demonstrate that a potential problem exists that should be investigated further, but cannot support an enforcement action, which may require more quantitative data.
- The procedures described in the EAH are similar to those described in the CERCLA and FS documents; in those cases where an enforcement action is initiated after completion of an RI/FS, the requirements of the EAH may

be met by the "Site Characterization" and "Analysis of No-Action Alternative" sections of the RI and FS document.

Applicability to RCRA Corrective Measures:

- Would be most useful in the site assessment and investigation and assessment steps that would be conducted prior to a CMS.

Guidance Document Name:

Uncontrolled Hazardous Waste Site Ranking System: A User's Manual

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, 1984

Environmental Media Covered:

Ground water, surface water, air, fire or explosion potential

Purpose of the Guidance Document:

- Presents the CERCLA requirements mandating a system for prioritizing Superfund sites to be used in the CERCLA PA/SI.
- Describes the Hazard Ranking System (HRS) and how to use it to identify releases of hazardous substances that pose the greatest hazard to humans or the environment.

Scope of the Guidance Document:

- Describes procedures to be followed by the Agency for uniform application of the HRS in each State.
- Illustrates the data required to rank a facility, and provides weighting values and appropriate inputs for each parameter.

Technical Approach:

- Provides detailed instructions and guidance for using the HRS and assigning facility scores based on three hazard potential modes -- migration of hazardous substances away from the facility by routes involving ground water, surface water, or air; fire and/or explosion; and direct contact.
- A score is computed for each migration pathway (ground water, surface water, air). Each pathway is scored based on observed release, route characteristics, containment, waste characteristics, and targets. These three scores are aggregated to produce a single migration score. The ranking of facilities for remedial action is based primarily on this migration score.

- Demonstrates when and how to compute a score for fire and explosion hazard mode. This score is based on waste characteristics (ignitability reactivity, incompatibility and quantity) and target information.
- Allows a site to be scored based either on a documented, observed release to the affected environmental medium or on the potential for a release based on the characteristics of the routes through which contaminants migrate.
- Demonstrates how to determine a direct contact score. This score is based on observed incidents, accessibility, containment, waste characteristics and targets.

Comparison With Relevant Documents:

- RCRA does not currently have a document which numerically ranks facilities based upon the magnitude of their potential environmental problems.

Applicability to RCRA Corrective Measures:

- Not directly applicable to RCRA corrective action program.

Construction Techniques/Procedures

A total of 2 documents which specify construction techniques and field operating procedures have been included in the section. The following summaries include brief assessments of the applicability of the documents to RCRA program corrective measures implementation.

Guidance Document Name:

Field Standard Operating Procedures (FSOP)

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, 1985

Environmental Media Covered:

Soil and air

Purpose of the Guidance Document:

- Outlines procedures which should be followed to minimize the risk of exposure to hazardous substances
- Each of the five FSOPs reviewed outlines the operating procedures for specific components of the remedial action program. These include:
 - Site Entry (#4)
 - Work Zones (#6)
 - Decontamination of Response Personnel (#7)
 - Air Surveillance (#8)
 - Site Safety Plans (#9)

Scope of the Guidance Document:

- Applicable to emergency response team members, remedial action team members, and personnel who plan for emergency responses or remedial actions.

Technical Approach:

- Each FSOP deals with a different aspect of personnel protection at contaminated sites. Each FSOP is divided into different sections. The sections generally give the following:
 - A general description of the given protective measures and why and when they are necessary
 - A description of the different levels of protection available within the given protective measure (e.g., the types of incidents encountered when performing air surveillance, or the degree of stringency when choosing personal protective equipment)

- Factors and criteria to consider when choosing a plan of action (e.g., how to select the locations of and stringency of procedures to follow in different work zones)
- Procedures to follow:
 - descriptions of techniques which can or should be employed
 - step-by-step instructions (e.g, 13 steps in putting on level A protective equipment)
 - check lists (e.g., minimum data required for safety both before and after a response)

Comparison with Relevant Documents:

- Most of these FSOPs were developed from November, 1984 "Standard Operating Safety Guides".
- These FSOPs are to be used by field technicians as opposed to administrative, managerial and quality assurance officers. The Quality Assurance/Field Operations Methods Manual fulfills the information needs of the managerial personnel.

Applicability to RCRA Corrective Measures:

- The documents will be useful in guiding field related activities and for ensuring that OSHA standards are met during corrective measures implementation.

Guidance Document Name:

Occupational Safety and Health Technical Assistance and Enforcement Guidelines for Superfund

Originating Office:

U.S. EPA, Office of Solid Waste & Emergency Response, Office of Emergency and Remedial Response

Status:

Final, March 15, 1984

Environmental Media Covered:

No environmental media are discussed.

Purpose of the Guidance Document:

- To provide direction for OSHA staff who may be called upon to provide technical assistance or to conduct enforcement activities at Superfund or other hazardous waste sites.

Scope of the Guidance Document:

- Provides overview of OSHA involvement in protecting workers involved in hazardous waste site clean-ups.

Technical Approach:

- Discusses technical assistance activities, enforcement activities, training requirements, cost reimbursement procedures.

Comparison with Relevant Documents:

This document is unique in scope.

Applicability to RCRA Corrective Measures:

- Would provide guidance on applicable OSHA worker safety regulations for implementation of a RCRA corrective measure.

Costing Techniques

A total of 2 documents on costing techniques have been included in this section. These documents provide guidance on how to manage, develop, and evaluate costs associated with remediation of contaminated sites. The following summaries include brief assessments of the applicability of the documents to RCRA program corrective measures implementation.

Guidance Document Name:

Remedial Action Costing Procedures Manual

Originating Office:

U.S. EPA, Office of Solid Waste & Emergency Response, Office of Emergency and Remedial Response

Status:

Final, September 1, 1985

Environmental Media Covered:

Only general costing procedures are discussed. No specific environmental media are identified.

Purpose of the Guidance Document:

- To provide specific procedures for the cost estimating and economic analysis steps required for preparing engineering cost estimates for selecting remedial action alternatives in response to CERCLA and the NCP.
- To be used in conjunction with EPA's guidance on feasibility studies under CERCLA.

Scope of the Guidance Document:

- Presents procedures and provides worksheets to accomplish cost analysis required for various remedial action planning phases.

Technical Approach:

Divides remedial action costing into 3 phases:

- Initial site response assessment plan phase.
- Alternate development and cost screening phase.
- Cost estimation phase for feasibility studies.

Comparison with Relevant Documents:

More comprehensive approach to cost management than the Removal Cost Management Method, which addresses only costing procedures at CERCLA emergency response actions (removals).

Applicability to RCRA Corrective Measures:

- Provides project managers and decision makers in government and industry with procedures for developing and evaluating cost estimates for alternative remedial responses to releases of hazardous substances.

Guidance Document Name:

Removal Cost Management Manual

Originating Office:

U.S. EPA, Office of Solid Waste & Emergency Response, Office of Emergency and Remedial Response

Status:

Final, January, 1985

Environmental Media Covered:

None

Purpose of the Guidance Document:

- To provide comprehensive cost management procedures for use by EPA at emergency response actions (removals) authorized under CERCLA.
- To be used by the On-Scene Coordinator (OSC).

Scope of the Guidance Document:

- Outlines a comprehensive cost management system for CERCLA emergency response actions.

Technical Approach:

- Discusses cost projection, cost control, cost recovery and cost documentation.

Comparison with Relevant Documents:

Unlike the Remedial Action Costing Procedures Manual, this document addresses only costing procedures at CERCLA emergency response actions (removals).

Applicability to RCRA Corrective Measures:

- Provides guidance on how to manage costs associated with remediation of contaminated sites.

Quality Assurance/Quality Control Guidance Documents

A total of 3 quality assurance/quality control (QA/QC) guidance documents have been included in this section. These documents provide guidance on QA/QC of field operations, data collection, and laboratories contracted to provide analytical services. The following summaries include brief assessments of the applicability of the documents to RCRA program corrective measures implementation.

Guidance Document Name:

Quality Assurance/Field Operations Methods Manual

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Remedial Response

Status:

Final, March, 1987

Environmental Media Covered:

Soils, groundwater, surface water, air

Purpose of the Guidance Document:

- Provides remedial project managers (RPMs), quality assurance officers, and States with a consolidated reference of all REM field procedures, with the exception of site safety issues and personal protection requirements.
- Promotes consistent field procedures among all ten EPA Regions.
- Compiled from procedures that were used successfully in executing EPA work assignments nationwide.

Scope of the Guidance Document:

- Provides a systematic comprehensive approach for conducting field activities under Superfund.
- Covers all aspects of field activities including development of field operation plans, site activities, sampling and analysis and documentation.

Technical Approach:

- Provides detail on the purpose, scope, procedures, applicability and responsibilities associated with all aspects of field operations with the exception of site safety issues, personal protection and sampling program design. Includes the following topics:
 - Documentation of field activities, sampling and analysis, quality control, and corrective action.
 - Field activity procedures.

- Sampling and analysis.
 - handling and control
 - laboratory procedures and interface
 - interpreting results of analyses
 - obtaining proper samples
- Assessing environmental impacts.
- Quality Assurance and document control auditing.

Comparison With Relevant Documents:

- Applicable to current EPA Regional standards and quality assurance requirements. Other documents appropriate to any aspect of field activities (e.g., most recent directives, memoranda, guidance documents and approved quality assurance plans) should be consulted simultaneously.

Applicability to RCRA Corrective Measures:

- Although this document identified procedural requirements of the Quality Assurance program for Superfund related field operations work, it will still have applicability to the RCRA program in that major program components are identified and key interfaces are detailed. This document should be useful in developing measures field operations QA programs.

Guidance Document Name:

Data Quality Objectives for Remedial Response Activities

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response, Office of Waste Programs Enforcement

Status:

Final, March 1987

Environmental Media Covered:

Soil, ground water

Purpose of the Guidance Document:

- Provides assistance in developing site-specific data quality objectives (DQOs) for Superfund Remedial Investigation/Feasibility Study (RI/FS) activities.

Scope of the Guidance Document:

- DQOs are written plans for ensuring that environmental data collected during RI/FS activities are of known and documented quality. DQOs are developed prior to data collection and are linked to sampling and analysis plans.
- Provides guidance and examples on the process by which DQOs are developed, individuals responsible for preparing DQOs, relationship of DQO guidance to other guidance, and timing for DQO development.

Technical Approach:

- DQOs are developed in three stages:
 - Identify decision types;
 - Identify data uses/needs; and
 - Design data collection program.
- Provides specific guidelines and procedures for evaluating available information, developing conceptual models, specifying objectives, identifying data needs, and developing data collection plans.
- Specifies statistical procedures, including sampling patterns, sample size, and uncertainty of estimates.

Comparison With Relevant Documents:

The guidance is similar to Test Methods for Evaluating Solid Waste (SW-846) in its review of statistical sampling considerations. However, it is less detailed in describing the analytical techniques and tools used in sampling waste sites.

Applicability to RCRA Corrective Measures:

- Provides guidance for designing a data collection program for the assessment and investigation activities which would precede a CMS.

Guidance Document Name:

User's Guide to the Contract Laboratory Program

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, July 1984

Environmental Media Covered:

Soil/sediment, water

Purpose of the Guidance Document:

- Provides a description of the Superfund Contract Laboratory Program structure
- Establishes protocol for standardizing procedural approaches to contracting analytic services

Scope of the Guidance Document:

- The User's Guide to the Contract Laboratory Program is to be used by RPMs, Remedial Investigation/Feasibility Study Contractors and potentially responsible parties throughout the data collection and analysis process of the CERCLA Remedial Investigation.
- Guide should be used by all handlers of samples and data to ensure the reliability and integrity of the data

Technical Approach:

- Covers five separate analytic programs
 - Organic Routine Analytical Services (RAS)
 - Inorganic RAS
 - Dioxin RAS
 - High Hazard Sample Preparation RAS
 - Special Analytical Services
- Describes methods for sample analysis scheduling and coordination with other program components
- Provides guidance on program quality assurance and quality control

- CLP provides a menu of RAS services which are correlated to various program components including:
 - sample matrices
 - compounds identified and quantified
 - deliverables
 - analytic procedures
 - QA/QC
- CLP requires workers initiation on standard operating procedures including:
 - chain of custody controls between various program offices
 - health and safety measures
 - analytical protocol
 - sample documentation
 - problem resolution
- Auxiliary Support Services are described including:
 - sample bottle repository services
 - ordering procedures
 - shipment information
- Enforcement interaction with the CLP includes
 - document controls
 - evidence audits
- Cost Recovery Substantiation procedures are described
- Quality Assurance includes
 - laboratory selection screening
 - laboratory performance
 - evaluations
 - sample data evaluations

Comparison With Relevant Documents:

- Provides a systematic, overall program management response to analytic services contracting in contrast to SW-846. The later document covers laboratory protocol and QA/QC, however does not provide a systematic program structure for implementing RCRA analytic services.

Applicability to RCRA Corrective Measures:

Provides guidance to contractors doing remedial investigations and assessments on procedural approaches to contracting analytical services in order to ensure the reliability and integrity of the data.

Program Guidance Documents

A key RCRA program guidance document has been summarized here. This document, the RCRA Corrective Action Plan, provides the basic framework for the overall program which can be supplemented by additional RCRA and CERCLA program guidance documents.

A total of 14 CERCLA program guidance documents have been reviewed and summarized. In general, this group of documents provides comprehensive program and project management guidance on implementation of the RI/FS process within the statutory and regulatory context of CERCLA. The majority of these documents will be of marginal use in the development of a RCRA Corrective Measures Study and its implementation. There are, however, some useful approaches to format and style in selected documents which may be of use to RCRA corrective measures implementation.

Guidance Document Name:

RCRA Corrective Action Plan

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Waste Programs Enforcement

Status:

Final, November 14, 1986

Environmental Media Covered:

Ground water, soils, surface water, air

Purpose of the Guidance Document:

- Assists Regions and States in development of Corrective Action Orders (3008(h)) and corrective action requirements in permit applications and permits.

Scope of the Guidance Document:

- Provides a technical framework for Regional and State personnel in development of a site-specific schedule of compliance to be included in a permit or a compliance schedule in a Corrective Action Order; includes requirements for RCRA Facility Investigations (RFIs), Corrective Measures Studies (CMSs), and work plans for Corrective Measures Implementation (CMI).

Technical Approach:

- Provides detailed discussion of the information to be provided for each of the following tasks:
 - RCRA Facility Investigation
 - Task I: Description of Current Conditions
 - Task II: Pre-Investigation Evaluation of Corrective Measure Technologies
 - Task III: RFI Workplan Requirements
 - Task IV: Facility Investigation
 - Task V: Investigation Analysis
 - Task VI: Laboratory and Bench-Scale Studies

Task VII: Reports

- Corrective Measure Study

Task VIII: Identification and Development of the Corrective Measure Alternative or Alternatives

Task IX: Evaluation of the Corrective Measure Alternative or Alternatives

Task X: Justification and Recommendation of the Corrective Measure or Measures

Task XI: Reports

- Corrective Measure Implementation

Task XII: Corrective Measure Implementation Program Plan

Task XIII: Corrective Measure Design

Task XIV: Corrective Measure Construction

Task XV: Reports

- Three-step approach outlined above is intended to standardize the data collection process and provide for key decision milestones throughout the Corrective Action process. Each step provides for the collection of increasingly detailed data for the characterization of site contamination.
- Major considerations, in planning data quality control and verification programs can be developed using the CAP framework.
- Process is to be employed whether site-specific Corrective Action is required as a permit condition or whether it is required as a result of enforcement action.

Comparison with Relevant Documents:

- Technical guidance on media-specific technologies identified in this summary may be used to supplement the outline given in the Corrective Action Plan.
- Specific costing considerations of RCRA corrective measures implementation should be taken from the Corrective Action Plan rather than OERR's Remedial Action Costing Procedures Manual. The OERR document includes fund-balancing criteria which are not relevant to the RCRA corrective action program.

Applicability to RCRA Corrective Measures:

- This document is a key resource document for Regional and State permit writers guiding corrective action at permitted facilities. It should be used to guide completeness checks of submittals made by owner/operators and for developing 3008(h) order and permit schedule of compliance language.

Guidance Document Name:

Guidance on Feasibility Studies Under CERCLA

Originating Office:

U.S. EPA, Office of Research and Development, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response, Office of Waste Programs Enforcement

Status:

Final, June 1985 (Workgroup Currently Revising)

Environmental Media Covered:

Ground water, surface water, air, soil

Purpose of the Guidance Document:

- Provides a structure for identifying, evaluating, and selecting remedial action alternatives at sites undergoing CERCLA actions.
- Should be used concurrently with the Guidance on Remedial Investigations under CERCLA when undertaking remedial response actions at Superfund sites.

Scope of the Guidance Document:

- Provides Federal and State Remedial Project Managers, their contractors, and decisionmakers in government and industry with guidelines for developing and evaluating alternative remedial responses to the uncontrolled releases of hazardous substances.
- Provides decisionmakers with information necessary for selecting cost-effective alternatives.

Technical Approach:

- Remedial action alternatives are developed and evaluated in terms of cost, technical performance, reliability, constructability, safety, and the extent to which each alternative protects public health and impacts the environment. Evaluations are conducted to estimate these factors both during and after implementation of the remedial alternative and full satisfaction of the institutional requirements.
- The feasibility study process consists of the following activities:

- Identifying existing problems at the site, including delineating sparse areas and identifying potential offsite problems due to contaminant migration through various media.
- Defining the objectives of the action and broadly developing general response actions to remedy known problems at the site;
- Identify and screen technologies applicable to each general response action.
- Develop remedial action alternatives which meet the stated objectives by combining the appropriate technologies.
- Developing specific alternatives within the general response categories; and
- Conducting a detailed evaluation of each alternative:
 - Technical evaluation including effectiveness, useful life, operation and maintenance requirements, demonstrated performance, constructability, time of implementation and safety of workers and residents;
 - Assessment of the impact of the proposed alternative on the surrounding environment including terrestrial, aquatic, biotic and atmospheric sub-environments;
 - Institutional analysis of the alternatives in terms of the Federal, State, or local standards, advisories, or guidance that must be attained or considered to protect public health, welfare, or the environment;
 - Public health exposure evaluation of the alternatives to ensure that remedial actions limit the concentrations of toxic substances in the environment to avoid unacceptable risk to human health;
 - Evaluation of the costs of the alternatives, including both baseline and sensitivity analyses, operation and maintenance costs and a present worth analysis.
- As part of the FS, at least one alternative that meets each of the following categories must be evaluated:
 - Off-site treatment or disposal;
 - Alternatives that achieve applicable and relevant Federal public health or environmental standards;
 - Alternatives that exceed applicable and relevant Federal public health or environmental standards;
 - Alternatives that reduce the long-term likelihood of threats from the hazardous substance and meet CERCLA's objective of adequately protecting public health, welfare, and the environment;
 - No action.

Comparison With Relevant Documents:

Provides a broader methodology for remedial alternative development than does the Handbook for Evaluating Remedial Action Technology Plans, however, unlike the Handbook, it does not provide any technology-specific evaluations.

Applicability to RCRA Corrective Measures:

- May provide interim guidance for RCRA program on contents of a CMS until RCRA-specific guidance is developed.

Guidance Document Name:

National Contingency Plan (NCP) 40 CFR Part 300

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, February 12, 1985 (50 FR 5862)

Environmental Media Covered:

Ground water, surface water, air, soils and sediments

Purpose of the Guidance Document:

- Provides the regulatory framework for implementing CERCLA. In particular, Subpart F - Hazardous Substances Response-establishes methods and criteria for determining the extent and nature of a CERCLA authorized response.

Scope of the Guidance Document:

Subpart F of the NCP:

- Provides the general requirements for all phases of a CERCLA hazardous substance response.
- Outlines the responsibilities of Federal and State officials in a CERCLA hazardous substance response.
- Outlines the minimum requirements for conducting a Remedial Investigation (RI) and Feasibility Study (FS) under CERCLA.

Technical Approach:

- **40 CFR 300.68 - Remedial action:**
 - Mandates an RI/FS to determine the nature and extent of the threat presented by a release and to evaluate proposed remedies.
 - Requires the development of remedial alternatives as part of the feasibility study.

- Requires analysis of these alternatives on the basis of
 - Cost
 - Acceptability of engineering practices
 - Effectiveness
- Selection of remedy that attains or exceeds federal public health and environmental requirements.
- 40 CFR 300.70 - Methods of remedying releases:
 - Lists engineering methods for onsite actions, including:
 - Air emissions controls
 - Surface water controls
 - Ground-water controls
 - Remedies for contaminated water and sewer lines
 - Lists technologies for
 - Gaseous emissions treatment
 - Direct waste treatment
 - Treatment of contaminated soils and sediments

Comparison with Relevant Documents:

- Provides the regulatory basis for many EPA guidance documents, including the Guidance Document for Cleanup of Surface Tank and Drum Sites (EPA, 1985), and Mobile Treatment Technologies for Superfund Wastes (EPA, 1986).

Applicability to RCRA Corrective Measures:

- Provides background guidance on data requirements for conducting remedial actions.
- Describes technical and cost considerations of technologies used in assessment studies.

Guidance Document Name:

Remedial Action at Waste Disposal Sites

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, October 1985

Environmental Media Covered:

Surface water, ground water, sub-surface gas, soil

Purpose of the Guidance Document:

- Provides broad descriptive summaries of a wide range of remedial technologies including:
 - description of process involved with each technology
 - applications of the various technologies
 - limitations of the various technologies
 - major design and construction considerations
 - approximate costs

Scope of the Guidance Document:

- Remedial Action at Waste Disposal Sites inventories and describes technical and cost considerations of technologies used in the CERCLA Feasibility Study Process
- The Handbook details data requirements for conducting CERCLA remedial actions including:
 - general site conditions data
 - waste characteristics data
 - site geology
 - ground water characteristics
 - surface water
 - climatology

Technical Approach:

- Describes remedial actions used to control contamination within various environmental media with respect to their applications, limitations and costs. This includes controls such as:

- capping, gas recovery, air pollution controls and dust control measures for air quality control
 - capping, grading, diversion, collection and revegetation for surface water remediation.
 - pumping systems, subsurface drains, slurry walls, grouting, and sheet piling techniques used for ground water remediation.
 - capping, collection, and recovery systems for sub-surface gas controls.
- Describes on-site and off-site disposal techniques for containment of wastes and soil. These controls deal with excavation, removal, and containment of contaminated materials usually with landfills.
 - Describes in-situ treatment including various types of biological, chemical, and physical treatment systems. In-situ treatment involves remediation of contaminated materials in their existing location.
 - Describes direct waste treatment including aqueous waste treatment, sludge handling, solidification, soil washing, and incineration.
 - Describes remediation of contaminated water supplies and sewer lines including investigating alternative water supplies.

Comparison With Relevant Documents:

- Supplements the procedural Guidance on Feasibility Studies Under CERCLA with specific technical discussions of remedial technologies

Applicability to RCRA Corrective Measures:

May be useful for the evaluation of corrective measures remedies in that it describes the applications, limitations, and costs of remedial actions used to control contamination of various media.

Guidance Document Name:

Superfund Remedial Design and Remedial Action Guidance

Originating Office:

U.S. EPA, Office of Emergency and Remedial Response, Office of Solid Waste and Emergency Response

Status:

Final, February 1985

Environmental Media Covered:

Does not specifically address any media; focuses on administrative requirements.

Purpose of the Guidance Document:

- To assist agencies and parties who plan, administer, and manage remedial design (RD) and remedial action (RA) at Superfund sites. Pertains to both fund financed RD/RA (i.e., Federal- and State-lead) and responsible party RD/RA, and provides personnel guidance to be followed in order to ensure that RD/RA is performed properly, consistently and expeditiously.

Scope of the Guidance Document:

- Outlines administrative requirements based on the general sequence of events that occurs prior to, during, and after remedial design and remedial action at a Superfund site. Pertains to both fund-financed and responsible party projects.

Technical Approach:

- The manual defines the administrative requirements, contents, and elements in the remedial design and remedial action processes. For remedial design, that process includes:
 - Activities involved in selecting an architect/engineering (A/E) firm.
 - Development of the remedial design and distribution of planning information to the lead design party.
 - Development of a statement of work for the A/E firm retained to accomplish the remedial design.
 - Review and approval of the A/E firm's final plans and specifications.

- Identification of applicable permits, permit approvals, and site access agreements.
- Revision of the community-relating plan based in needs of the community during the design and construction activities.
- Development of cost estimates for construction.
- The process for initiation of remedial action includes the following:
 - Selection of contractor for the remedial action.
 - Monitoring and oversight of construction activities and needed records and reports to be used in the final certification of the remedial action.
 - Final inspection and closeout activities after completion of the remedial action.

Comparison With Relevant Documents:

As outlined above, the RD/RA guidance provides the administrative and procedural requirements for remedial design and remedial action, as opposed to other documents which highlights the technical aspects of these activities.

Applicability to RCRA Corrective Measures:

- May be helpful to the extent that administrative requirements for remedial design and action at Superfund sites coincide with administrative requirements for remedial design and action at RCRA sites.

Guidance Document Name:

Community Relations in Superfund: A Handbook

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Draft, October 1986

Environmental Media Covered:

No specific environmental media addressed

Purpose of the Guidance Document:

- Provides policy requirements for coordinating community relations activities at Superfund sites.
- Provides additional techniques and guidance that can be used to enhance the basic requirements for community relations.
- Describes the overall objectives of the Superfund community relations program.
- Gives citizens the opportunity to comment on and provide input to technical decisions
- Informs the public of planned or ongoing actions.
- Focuses and resolves conflict.

Scope of the Guidance Document:

- Describes the various requirements for conducting community relations activities during removal actions, enforcement actions, remedial response actions, and for the addition and deletion of sites from the NPL.
- Describes the two critical steps in planning a community relations program for a Superfund remedial action:
 - Conducting community interviews; and
 - Developing a site-specific community relations plan.
- Provides a list of all key EPA Headquarters and Regional contacts for the Superfund community relations program.

Technical Approach:

- The Superfund Community Relations Handbook specifically addresses activities to be conducted during CERCLA corrective actions, while the Guidance on Public Involvement in the RCRA Permitting Program does not currently address specific activities related to RCRA corrective actions.
- The Superfund guidance responds to a specific mandate in the NCP for conducting community relations not present in RCRA 3004 (u), and addresses many specific requirements for public involvement.

Comparison with Relevant Documents:

- Provides detailed guidelines on CERCLA community relations programs analagous to the public participation guidelines given in OSWER 9500.00-1A Guidance on Public Involvement in the RCRA Permitting Program.

Applicability to RCRA Corrective Measures:

- May be helpful in formulating a community relations program at a RCRA site.

Guidance Document Name:

Superfund Federal-Lead Remedial Project Management Handbook

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, December 1986

Environmental Media Covered:

Process affecting all environmental media

Purpose of the Guidance Document:

- Document serves three general purposes:
 - presents various actions and deliverables that comprise the Federal-Lead remedial project and defines roles and responsibilities of the Remedial Project Manager (RPM).
 - identifies resources available to the RPM for support of the remedial project management function.
 - provides fundamental concepts of project management to aid the RPM in planning monitoring, controlling and directing projects.

Scope of the Guidance Document:

- The Superfund Federal-Lead Remedial Project Management Handbook provides basic project management concepts regarding project planning, monitoring and control, and the directing, coordinating and communicating of project objectives which are to be applied during the CERCLA Feasibility Study Process
- The Handbook discusses initial project planning and start-up activities, and describes the RPM's role in ensuring the RI/FS work is conducted in accordance with project plans.

Technical Approach:

- Illustrates process for implementing Federal-Lead Remedial Action by use of a process flow chart with supporting narrative.
- Describes management and control techniques for ensuring project implementation in accordance with the project plan (e.g., use of Gantt Milestone Chart).

- Illustrates functional roles of EPA and contractors in implementing RI/FSs.
- Describes in detail the various steps involved in start-up, implementation and close-out.
- Describes the role of the Record of Decision (ROD) in documenting the decision-making process. Provides a model ROD.

Comparison With Relevant Documents:

- Similar in format and design to "Superfund State-Lead Remedial Project Management Handbook".

Applicability to RCRA Corrective Measures:

- No direct applicability to RCRA corrective measures process.

Guidance Document Name:

Superfund State-Lead Remedial Project Management Handbook

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, December 1986

Environmental Media Covered:

Process affecting all environmental media

Purpose of the Guidance Document:

- Document serves three general purposes:
 - presents various actions and deliverables that comprise a State-Lead remedial project and defines the roles and responsibilities of the Remedial Project Manager (RPM).
 - identifies resources available to RPM for support of the remedial project management function.
 - provides fundamental concepts of project management to aid the RPM in planning, monitoring, controlling, and directing projects.

Scope of the Guidance Document:

- The Superfund State-Lead Remedial Project Management Handbook provides basic project management concepts regarding project planning, monitoring and control and directing, coordinating and communicating project objectives which are to be applied during the CERCLA Feasibility Study process.
- The Handbook discusses initial project planning and start-up activities and describes the RPM's role in ensuring the RI/FS work is conducted in accordance with project plans.

Technical Approach:

- Illustrates process for implementing Federal-Lead Remedial Action by use of a process flow chart. Describes the interrelationships of the RPM with the various institutional entities, contractors and potentially responsible parties.
- Descriptive approach to management and control techniques for ensuring project implementation in accordance with project plan (e.g., use of Gantt Milestone Chart).

- Illustrates functional roles in EPA, State and contractors in implementation of RI/FS.
- Inventories types of cooperative agreements available between the States & EPA.
- Describes the role of the Record of Decision (ROD) in documenting the decision making process. Provides a model ROD.

Comparison With Relevant Documents:

- Similar in format and design to "Superfund Federal-Lead Remedial Project Management Handbook".

Applicability to RCRA Corrective Measures:

- No direct applicability to RCRA corrective measures process.

Guidance Document Name:

State Participation in the Superfund Remedial Program

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, April 1985 (Includes Addenda 1-6)

Environmental Media Covered:

Procedural guidance applicable to program management

Purpose of the Guidance Document:

- Provides information on how to implement approved remedial response activities at National Priorities List (NPL) sites in accordance with the National Oil and Hazardous Substances Contingency Plan (NCP).
- Incorporates Superfund initiatives to make it easier for states to join EPA in addressing problems at uncontrolled hazardous waste sites.
- Describes the process for entering into a Cooperative Agreement (CA) and for executing the remedial response under the purview of the CA.

Scope of the Guidance Document:

- State participation in the Superfund Remedial Program is to be used during the CERCLA RI/FS activities. CAs may be initiated prior to RI/FS work, however, they should be fully enforced during the RI/FS process.

Technical Approach:

- Includes description of cooperative agreements, Superfund State Contracts and credit claims.
- Describes remedial response process for State-Lead and EPA-Lead sites.
- Discusses management issues such as cost-sharing, off-site treatment, storage or disposal.
- Describes intergovernmental review procedures.
- Inventories types of state assurances available under Remedial Response Agreements.

- Describes concurrent administrative events such as:
 - initiation of enforcement activities
 - initiation of Forward Planning
 - development of site specific schedules
 - development of the Remedial Accomplishments Plan
 - Development of the Action Memorandum
 - Identification of State Credit Submissions
 - Intergovernmental Review
- Describes development of Cooperative Agreement Application Forms and Provisions.
- Describes interface with federal procurement system.
- For EPA-Lead remedial planning agreements the document describes EPA and State Responsibilities.
- Describes cost-sharing arrangements under Superfund State Contracts.
- Describes the execution and administration of the Remedial Agreement and agreement modifications.

Comparison With Relevant Documents:

- Should be used with Federal-Lead Remedial Project Management Handbook and the State-Lead Remedial Project Management Handbook.

Applicability to RCRA Corrective Measures:

- No direct applicability to RCRA corrective measures process.

Guidance Document Name:

Current Remedial Action Program in Support of Superfund

Originating Office:

U.S. EPA, Office of Research and Development, Hazardous Waste Engineering Research Laboratory

Status:

Final, December, 1984

Environmental Media Covered:

None

Purpose of the Guidance Document:

- Discusses ongoing and completed activities of the Land Pollution Control Division (LPCD) of the Hazardous Waste Engineering Research Laboratory (HWERL). Focus of report is on activities of the Containment Branch of the LPCD research and development (R&D) program.

Scope of the Guidance Document:

- Documents activities of the four major areas of the Containment Branch of the LPCD R&D program:
 - Survey and assessment of current technologies.
 - Laboratory and site design analysis.
 - Field evaluation and verification of techniques.
 - Technical handbooks.

Technical Approach:

Methods employed in the activities of the four areas of the LPCD Containment Branch R&D program include:

- Survey and assessment of current technologies
 - Definition of site specific problems.
 - Identification of problems associated with implementing the technologies.
 - Determination of technology effectiveness.

- Identification of technology costs.
- Development and use of models.
- Laboratory and site design analysis
 - Performance of bench-scale analyses.
 - Evaluation of potential for application to actual field conditions.
- Field evaluation and verification of techniques.
 - Field testing of promising technologies.
- Technical handbooks.
 - Preparation of technical handbooks incorporating remedial action control technologies.

Comparison with Relevant Documents:

- Unlike other documents (e.g., *Mobile Treatment Technologies for Superfund Wastes*), this report is not a guidance document for planners of Superfund actions. It simply documents current R&D efforts of the HWERL LPCD.

Applicability to RCRA Corrective Measures:

- May provide insight on the utility of using an emerging technology for remedial activities.

Guidance Document Name:

Policy on Floodplains and Wetlands Assessment

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response

Status:

Final, August 6, 1985

Environmental Media Covered:

Surface water, ground water

Purpose of the Guidance Document:

- To set forth Agency policy and guidance for carrying out the provisions of Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands), as described in Appendix A of 40 CFR Part 6.

Scope of the Guidance Document:

- Discusses situations that require preparation of a floodplains or wetlands assessment, and the factors which should be considered in preparing an assessment, for response actions undertaken pursuant to Section 104 or 106 of CERCLA.

Technical Approach:

Discusses the following:

- Removal Actions
 - Floodplain/wetland assessment
 - Opportunity for citizen comment
- Remedial Actions
 - Consideration of environmental issues
- Documentation of Decision

Comparison with Relevant Documents:

Document is unique in scope.

Applicability to RCRA Corrective Measures:

- Enunciates EPA's policy to encourage pursuit of remedies that attain or exceed applicable and relevant standards of other Federal environmental laws that deal with floodplains and wetlands.

Guidance Document Name:

Participation of Potentially Responsible Parties in Development of RIs and FSs

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Waste Program Enforcement

Status:

Final, March 20, 1984

Environmental Media Covered:

None

Purpose of the Guidance Document:

To set forth the policy and procedures governing participation of potentially responsible parties (PRPs) in development of remedial investigations (RI) and feasibility studies (FS) under CERCLA.

Scope of the Guidance Document:

Discusses:

- Circumstances in which RI/FS may be conducted by PRPs.
- Procedures for notifying PRPs when the agency has identified target sites for the development of RI/FS.
- Principles governing PRP participation in agency-financed RI/FS.

Technical Approach:

- Discusses drawbacks to previous approaches to PRP participation in RI/FS.
- Discusses situations where private parties may conduct RI/FS
- PRPs will be subject to criteria enunciated in final version of RI and FS technical manuals.
- Until RI and FS guidances are final, PRPs may develop RI/FS if they commit to follow workplans for RI/FS prepared by agency supervised contractors.
- Discusses the way in which PRPs will be notified of the opportunity to perform the RI/FS.
- Discusses regional role in RI/FS development by PRPs.

Comparison with Relevant Documents:

Document is unique in scope.

Applicability to RCRA Corrective Measures:

This document deals with the administrative procedures governing PRP participation, and is not directly relevant to the RCRA corrective measures program.

Guidance Document Name:

Guidance Memorandum on Use and Issuance of Administrative Orders Under §106(a) of CERCLA

Originating Office:

U.S. EPA, Office of Solid Waste and Emergency Response, Office of Waste Programs Enforcement

Status:

Final, February, 1985

Environmental Media Covered:

No specific medium; administrative procedures only

Purpose of the Guidance Document:

- Recommends administrative procedures to be followed in preparing issuing, modifying or revoking an administrative order under CERCLA §106(a)
- Also applicable to Administrative Orders issued under the authority of RCRA Section 7003

Scope of the Guidance Document:

- For use by EPA CERCLA enforcement programs
- Applicable to persons involved in CERCLA enforcement

Technical Approach:

- Identified 5 legal prerequisites needed to substantiate an Order.
- Specifies persons/parties to whom an Order may be issued
- Lists and describes specific factors which should be considered when deciding whether to issue an Order rather than take other possible enforcement actions
- Lists specific elements which should be addressed in an Order. A sample Administrative Order is included in the appendix
- Describes what measures be compelled, how to compel them, and the administrative chain of command to follow when issuing orders for either immediate removals or planned removals/remedial actions.

- Suggest time frames and procedures to follow after issuing the order so that the recipient has reasonable opportunity to confer with EPA
- Outlines the procedures to follow if an Order is not obeyed.

Comparison with Relevant Documents:

- This guidance memorandum updates and supercedes September 1984 guidance on the use and issuance of RCRA Section 7003 Administrative Orders.

Applicability to RCRA Corrective Measures:

- Administrative procedures of CERCLA 106 Orders are similar in purpose to RCRA Section 7003 Orders. However, RCRA procedures should be followed for RCRA corrective action.

Guidance Document Name:

Preparation of Decision Documents for Approving Fund-Financed & PRP Remedial Actions under CERCLA

Originating Office:

U.S. EPA, Office of Solid Waste & Emergency Response, Office of Waste Program Enforcement

Status:

Final, February 27, 1985

Environmental Media Covered:

None

Purpose of the Guidance Document:

- To assist Regional Offices in the preparation of decision documents required for approval of fund-financed and potentially responsible party (PRP) remedial actions.

Scope of the Guidance Document:

- Describes administrative process for completing Records of Decision (ROD), Negotiation Decision Documents (NDD), and Enforcement Decision Documents (EDD).

Technical Approach:

- Discusses Record of Decision (ROD) approval process.
- Discusses Negotiation Decision Document (NDD)/Enforcement Decision Document (EDD) approval process.

Comparison with Relevant Documents:

Document is unique in scope.

Applicability to RCRA Corrective Measures:

- This memorandum documents an administrative decision making process which does not appear relevant to the RCRA Corrective Action Program.