17.2.2

EPA/540-R-93-057
Publication 9360.0-32
PB93-963402
August 1993

# GUIDANCE ON CONDUCTING NON-TIME-CRITICAL REMOVAL ACTIONS UNDER CERCLA

Office of Emergency and Remedial Response
U.S. Environmental Protection Agency
Washington, DC 20460

## Notice

The policies and procedures set forth herein are intended solely as guidance for government personnel. They are not intended, nor can they be relied on, to create any rights enforceable by any party in litigation with the United States (U.S.). U.S. Environmental Protection Agency officials may decide to follow this guidance or act at variance with it, based on an analysis of specific site circumstances. The Agency also reserves the right to change this guidance at any time without public notice.

## Contents

## Contents (Continued)

## Exhibits

## List of Acronyms

AOC—Administrative Order on Consent

ARARs—Applicable or Relevant and Appropriate Requirements

ARCS—Alternative Remedial Contracting Strategy

ATSDR—Agency for Toxic Substances and Disease Registry

ATTIC—Alternative Treatment Technology Information Center

CA—Cooperative Agreement

CERCLA—Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended

CFR—Code of Federal Regulations

CLP—Contract Laboratory Program

CLU-IN—Cleanup Information Bulletin Board

CRP—Community Relations Plan

DOD—Department of Defense

DOE—Department of Energy

EE/CA—Engineering Evaluation/Cost Analysis

EIS—Environmental Impact Statement

EPA—United States Environmental Protection Agency

ERCS—Emergency Response Cleanup Services

ERRS—Emergency and Rapid Response Services

ERT—Environmental Response Team

FR—Federal Register

LTCS—Long-Term Contracting Strategy

MCLs—Maximum Contaminant Levels

MCLGs—Maximum Contaminant Level Goals

MOU—Memorandum of Understanding

NCP—National Oil and Hazardous Substances Pollution Contingency Plan

NPL—National Priorities List

NRT—National Response Team

## List of Acronyms (Continued)

O&M—Operation and Maintenance
OMB—Office of Management and Budget
OPA—Office of Policy Analysis
ORC—Office of Regional Counsel
ORD—Office of Research and Development
OSC—On-Scene Coordinator
OSWER—Office of Solid Waste and Emergency Response
PA—Preliminary Assessment
PRP—Potentially Responsible Party
PRSC—Post-Removal Site Control
QA/QC—Quality Assurance/Quality Control
RA—Regional Administrator
RRT—Regional Response Team
RCRA—Resource Conservation and Recovery Act
RDT—Regional Decision Team
RI/FS—Remedial Investigation/Feasibility Study
ROD—Record of Decision
RPM—Remedial Project Manager
SACM—Superfund Accelerated Cleanup Model
SARA—Superfund Amendments and Reauthorization Act of 1986
SI—Site Inspection
SITE—Superfund Innovative Technology Evaluation
START—Superfund Technical Assessment and Response Team
TAT—Technical Assistance Team
TBC—To Be Considered
TIO—Technology Innovation Office
UAO—Unilateral Administrative Order

## List of Acronyms (Continued)

USGS—United States Geological Survey

VISITT—Vendor Information System for Innovative Treatment Technologies

VOC—Volatile Organic Compound

# CHAPTER 1

## INTRODUCTION AND OVERVIEW

The purpose of this guidance is to provide information on the procedures and activities the U.S. Environmental Protection Agency (EPA) uses in conducting non-time-critical removal actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). On-Scene Coordinators (OSCs) and Remedial Project Managers (RPMs) should use this guidance to ensure that non-time-critical removal actions are conducted in accordance with applicable laws, regulations, and EPA policy.

This guidance focuses primarily on those aspects of the removal process that are unique to non-time-critical removal actions. Introductory material presented in this chapter provides a context for how non-time-critical removal actions fit within the overall Superfund program.

Chapter 1 contains seven sections, as follows:

- Section 1.1 describes non-time-critical removal actions in relation to the Superfund Accelerated Cleanup Model (SACM).
- Section 1.2 provides an overview of the removal process.
- Section 1.3 highlights the roles and responsibilities of Federal, State, and private entities in conducting non-time-critical removal actions.
- Section 1.4 outlines the resources available to OSCs/RPMs in conducting non-time-critical removal actions.
- Section 1.5 describes enforcement and cost recovery activities.
- Section 1.6 highlights public involvement and administrative record requirements for non-time-critical removal actions.
- Section 1.7 describes Action Memorandum requirements for non-time-critical removal actions.

Chapter 2 provides guidance for conducting an Engineering Evaluation/Cost Analysis (EE/CA), which analyzes removal action alternatives for a site. Chapter 2 supersedes the outline for conducting an EE/CA dated March 30, 1988. An EE/CA, required under section 300.415(b)(4)(i) of the NCP for all non-time-critical removal actions, provides a vehicle for public involvement and evaluates and recommends the appropriate response.

Chapter 2 describes the following EE/CA activities:

- Section 2.1 provides information on when non-time-critical removal actions may be appropriate and on the EE/CA development process.

- Section 2.2 describes the purpose and content of the EE/CA Approval Memorandum.
- Section 2.3 explains that the Executive Summary should provide a general overview of the EE/CA.
- Section 2.4 highlights the types of information that should be gathered to characterize the site, determine the source, nature, and extent of contamination, and assess risks posed by the site.
- Section 2.5 outlines how to identify removal action objectives for the non-time-critical removal action.
- Section 2.6 describes the process for identifying and analyzing removal action alternatives.
- Section 2.7 describes how to compare removal action alternatives for effectiveness, implementability, and cost.
- Section 2.8 describes how to determine the recommended removal action alternative.

Details on conducting removal actions are found in a variety of laws, regulations, and guidance documents. Additional references that may be consulted for further information are presented at the conclusion of each section of this chapter, with a list of references presented in Appendix A of this guidance. Appendix B presents a key word index of major terms used in this guidance. Appendix C presents a comparison of the EE/CA process and the remedial investigation/feasibility study (RI/FS) process. Appendix D presents a model Notice of Decision Not to Use Special Notice Procedures.

## 1.1 THE SACM APPROACH

SACM is now being implemented to make Superfund cleanups more timely and efficient. The non-time-critical removal action represents a primary SACM tool for accomplishing early actions, and can be applied to a broad array of response actions. Specifically, SACM involves:

- A continuous process for assessing site-specific conditions and the need for action
- Cross-program coordination of response planning
- Prompt risk reduction through early action
- Appropriate cleanup of long-term environmental problems
- Early public notification and participation
- Early initiation of enforcement activities.

SACM should be considered for all Superfund activities, so long as implementation is consistent with requirements of the NCP and CERCLA. Overall Superfund program priorities remain the same: address the worst problems first, aggressively pursue enforcement, and involve the public during all stages of the work. The goals of SACM are being accomplished by focusing on the front end of the cleanup process and better integrating all Superfund program components.

## 1.1 THE SACM APPROACH (CONTINUED)

SACM encourages EPA Regions to explore new ways to use removal authorities under the NCP to achieve prompt risk reduction. An integrated removal and remedial site management strategy under SACM will most likely involve the increased use of non-time-critical removal authority to achieve prompt risk reduction at Superfund sites. Regional Decision Teams (RDTs), a SACM concept introduced in OSWER Publication 9203.1-05I, Volume I, Number 5, "SACM Regional Decisions—Interim Guidance" (December 1992), PB93-96266, are anticipated to emphasize early actions such as non-time-critical removal actions without jeopardizing the Superfund program's commitment to enforcement first. Decisions will be made to ensure that an early action will be consistent with any long-term action that may eventually be required. In the context of non-time-critical removal actions, this means that opportunities for treatment and permanence should be fully evaluated in the EE/CA, where appropriate (see Chapter 2).

**For More Information:**

1. OSWER Publication 9203.1-05I, Volume 1, Numbers 1-5 (December 1992)
   - "Status of Key SACM Program Management Issues—Interim Guidance," PB93-963262.
   - "Early Action and Long-Term Action Under SACM—Interim Guidance," PB93-963263.
   - "Enforcement Under SACM—Interim Guidance," PB93-963264.
   - "Assessing Sites Under SACM—Interim Guidance," PB93-963265.
   - "SACM Regional Decision Teams—Interim Guidance," PB93-963266.
2. OSWER Publication 9200.2-02, "Accelerated Response at NPL Sites Guidance" (December 15, 1989), PB90-258302/CCE.
3. OSWER Publication 9203.1-03, "Guidance on Implementation of the Superfund Accelerated Cleanup Model (SACM) under CERCLA and the NCP" (July 7, 1992), PB93-963252.
4. OSWER Publication 9203.1-03A, "Exercising Flexibility Through the Superfund Accelerated Cleanup Model (SACM)" (October 26, 1992), PB93-963253.
5. OSWER Publication 9360.0-15, "The Role of Expedited Response Actions Under SARA" (April 21, 1987), PB91-214221/CCE.

## 1.2 OVERVIEW OF THE REMOVAL ACTION PROCESS

CERCLA and the NCP define removal actions to include "the cleanup or removal of released hazardous substances from the environment, such actions as may necessarily be taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release." EPA has categorized removal actions in three ways: emergency, time-critical, and non-time-critical, based on the type of situation, the urgency and threat of the release or potential release, and the subsequent time frame in which the action must be initiated. Emergency and time-critical removal actions respond to releases requiring action within 6 months; non-time-critical removal actions respond to releases requiring action that can start later than 6 months after the determination that a response is

## 1.2 OVERVIEW OF THE REMOVAL ACTION PROCESS (CONTINUED)

necessary. Each response is unique and may require more expedited response based on the threatened population, contaminants of concern, and other factors. The following are potential removal actions identified in section 300.415(b)(2)(i)-(viii) of the NCP:

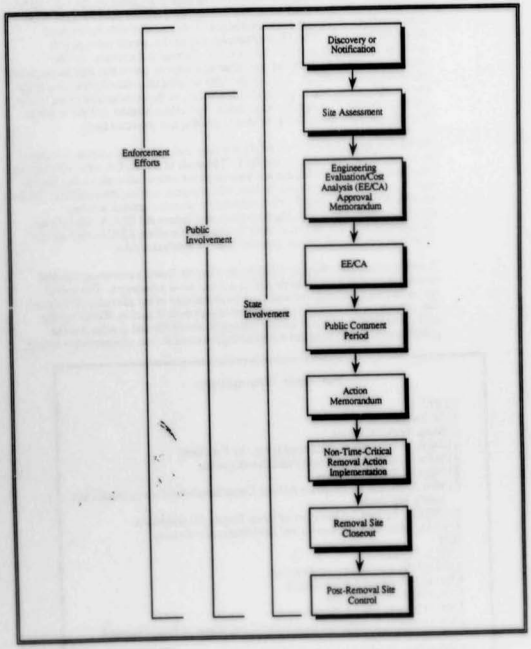
- Prevention or abatement of actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants, or contaminants
- Prevention or abatement of actual or potential contamination of drinking water supplies or sensitive ecosystems
- Stabilization or elimination of hazardous substances in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release
- Treatment or elimination of high levels of hazardous substances, pollutants, or contaminants in soils largely at or near the surface that may migrate
- Minimization or elimination of the effects of weather conditions that may cause hazardous substances, pollutants, or contaminants to migrate or to be released
- Elimination of threat of fire or explosion
- Determination of availability of other appropriate Federal or State response mechanisms to respond to the release
- Mitigation or abatement of other situations or factors that may pose threats to public health, welfare, or the environment.

OSCs/RPMs must always consider section 300.415 in determining the appropriateness of taking any removal action. Section 300.415(d)(1)-(9) of the NCP provides a partial list of removal actions that may be taken to address specific situations. Exhibit 1, on the following page, illustrates the non-time-critical removal action process.

The following steps are for non-time-critical removal actions:

- Section 300.410 of the NCP outlines the process for conducting a **removal site evaluation**, which includes a removal preliminary assessment (PA) and, if warranted, a removal site inspection (SI). The OSC/RPM performs the removal PA, based on readily available information, to identify the source and nature of the release or threatened release and to assess the threat to public health, the magnitude of the threat, and the factors necessary to determine the need for a removal action. The removal PA also determines if more information is needed to characterize the release, such as off-site or on-site inspection of conditions and sampling. If more information is necessary, the OSC/RPM performs a removal SI. Data gathered during the removal site evaluation help OSCs/RPMs determine the need for response, if any, and the urgency of the response. For non-time-critical removal actions, OSCs/RPMs further characterize the release and propose the removal action as a result of the EE/CA process, as discussed in Chapter 2. The subsequent selection of the appropriate response is made in the Action Memorandum.

**EXHIBIT 1**
**Non-Time-Critical Removal Action Process***




* Additional removal actions or remedial actions may occur at any time, depending on the exigencies of the site conditions.

## 1.2 OVERVIEW OF THE REMOVAL ACTION PROCESS (CONTINUED)

- In general, the **EE/CA Approval Memorandum** is prepared by the OSC/RPM once the removal site evaluation has been completed and the need for a non-time-critical removal action has been determined. This memorandum serves three important functions. First, the memorandum is used to secure management approval and funding to conduct the EE/CA. Second, it documents that the situation meets the NCP criteria for initiating a removal action and that the proposed action is non-time-critical. Third, it provides detailed information pertaining to the site background; threats to public health, welfare, or the environment posed by the site (e.g., expected changes in the situation if no action is taken or if the action is delayed); enforcement activities related to the site; and projected costs.

- An **EE/CA** must be completed for all non-time-critical removal actions as required by section 300.415(b)(4)(i) of the NCP. The goals of the EE/CA are to identify the objectives of the removal action and to analyze the various alternatives that may be used to satisfy these objectives for cost, effectiveness, and implementability. While an EE/CA is similar to the RI/FS conducted for remedial actions, it is less comprehensive. The Action Memorandum summarizes the EE/CA. EE/CAs are considered CERCLA section 104(b)(1) studies. Therefore, EE/CA costs are not counted toward the $2 million statutory limit on removal actions.

- A public notice describing the EE/CA (see Chapter 2) and announcing a **public comment period** must be published in a major local newspaper. The public notice may be combined with notice of the availability of the administrative record file, pursuant to the administrative record requirement in section 300.820 of the NCP. The EE/CA is part of the administrative record file and is subject to the public comment and comment response requirements for the administrative record.

**For More Information:**

1. CERCLA:
   - §101, Definitions
   - §104(a), Removal Action
   - §104(b), Investigations, Monitoring, etc., by President
   - §104(b)(1), Information; Studies and Investigations
   - §104(c)(1), Statutory Limits
   - §104(f), Contracts for Response Action; Compliance with Federal Health and Safety Standards
   - §113(g)(2), Actions for Recovery of Costs Statute of Limitations
   - §113(k), Administrative Record and Participation Procedures
2. NCP:
   - §300.5, Definitions
   - §300.400(b), Limitations on Response
   - §300.410, Removal Site Evaluation
   - §300.415, Removal Action
   - §300.415(b)(4), EE/CA Requirement
   - §300.415(b)(5), Exemptions to Statutory Limitations on Fund-Financed Removal Actions
   - §300.415(c), Contribution to Remedial Action

§300.150, Worker Health and Safety
§300.160, Documentation and Cost Recovery
§300.135(m), Reporting Requirements for Response Operations
§300.165, OSC Reports
§300.820, Administrative Record File for a Removal Action

3. OSWER Publication 9203.1-05I, Volume 1, Number 4, "Assessing Sites Under SACM—Interim Guidance" (December 1992), PB93-963265.
4. OSWER Publication 9285.1-03, "Standard Operating Safety Guides" (June 1992), PB92-963414.
5. OSWER Publication 9285.8-02, "Health and Safety Audit Guidelines: SARA Title I, Section 126" (December 1989), EPA/540/G-89/010, PB90-204157.
6. OSWER Publication 9360.0-02C, "Removal Cost Management System: Version 3.2" (May 1990), EPA/540/P-90/003, PB90-272691.
7. OSWER Publication 9360.0-12A, "Final Guidance on Implementation of the 'Consistency' Exemption to the Statutory Limits on Removal Actions" (June 12, 1989), PB90-274465/CCE.
8. OSWER Publication 9360.0-12FS, "Exemptions from the Statutory Limits on Removal Actions" (November 1990), PB91-921304/CCE.
9. OSWER Publication 9360.0-18, "Removal Program Priorities" (March 31, 1988), PB91-205484/CCE.
10. OSWER Publication 9360.2-04, "Authorization for Regional Administrators to Approve Consistency Exemption at NPL Sites" (February 24, 1992), PB92-963343.
11. 29 CFR §1910.120, HAZWOPER Regulations
12. 40 CFR Part 311, Worker Protection

## 1.3 ROLES AND RESPONSIBILITIES

Because of the urgency of emergency and time-critical removal actions, EPA OSCs/RPMs or U.S. Coast Guard OSCs generally retain the lead for conducting or overseeing these actions. For non-time-critical removal actions, it may be appropriate for the State to take the lead in conducting the removal action or taking enforcement actions. Regardless of who takes the lead, the OSC/RPM is responsible for determining whether technical assistance is needed from another agency and arranging for that assistance.

In carrying out a non-time-critical removal action, the OSC/RPM directs or reviews the work of other agencies, PRPs, and contractors to ensure compliance with CERCLA and the NCP; reviews all decision documents, enforcement orders, and workplans; oversees all expenditures of EPA funds; and ensures that all staff working on the response know site operating and safety procedures. The following section briefly describes the types of responsibilities specific to non-time-critical removal actions.

### Regional Decision Team

The RDT convenes to consider response options at the point when assessment information is adequate to support decision-making. The RDT, a new concept under SACM, ensures effective coordination, communication, and integration of Superfund program authority, expertise, resources, and tools. For non-time-critical removal actions, the RDT should assist in assessing the

opportunity for response and in initiating the preparation of the EE/CA Approval Memorandum, the EE/CA, and the Action Memorandum. The RDT assists in determining whether proposed actions are time-critical or non-time-critical or whether the site requires remedial action. RDT involvement in emergency removal action and the more time-critical removal action decision-making may be limited based on the time available before initiating action. Also, RDT involvement in removal assessments and decision-making may vary from Region to Region.

### State Involvement

Pursuant to 40 CFR Subpart O, section 35.6200, when a planning period of more than 6 months is available, States, political subdivisions, and Indian Tribes may apply for a removal Cooperative Agreement (CA) to lead a non-time-critical removal action. When a State does not participate in conducting and/or financially supporting a Fund-lead non-time-critical removal action, the RDT should first determine the urgency of the situation, and then, depending on the outcome of the urgency assessment, determine whether the non-time-critical removal action should proceed despite lack of State involvement. Headquarters will remain involved under SACM for approving consistency exemptions from the $2 million removal limit at sites not on the National Priorities List (NPL).

### Potentially Responsible Party (PRP) Involvement

One of EPA's primary objectives for any Superfund action is to have the parties responsible for the release of hazardous substances be accountable for the response. CERCLA authorizes EPA to negotiate settlements, issue orders to compel response, or sue PRPs to repay response costs when the Fund has been used to finance removal actions. Because non-time-critical removal actions permit a planning period of at least 6 months, there is time for enforcement planning before the start of on-site activity. As with other removals, the OSC/RPM should work with Regional technical enforcement staff to identify PRPs, initiate actions to obtain PRP response, and conduct negotiations to enter into settlement agreements (see section 1.5).

### Responsibility for Post-Removal Site Control (PRSC)

In some cases, PRSC activities will be necessary to ensure the continuing effectiveness of a completed non-time-critical removal action. Examples of these activities are relighting gas flares, replacing filters, and collecting leachate. Superfund program policy for completing removal actions states that protracted and costly long-term PRSC is more appropriately conducted by the affected State or local government or PRPs. If the OSC/RPM believes that PRSC may be necessary, the OSC/RPM should obtain a commitment from the State or local government or PRP to perform and fund necessary PRSC actions prior to initiating a response. Such commitments could be part of a settlement document with a PRP or take the form of a letter agreement or Memorandum of Understanding (MOU) with State or local governments. If the OSC/RPM is unable to obtain such an agreement, removal options that involve continuing PRSC should be avoided where other options are feasible.

## 1.3 ROLES AND RESPONSIBILITIES (CONTINUED)

**For More Information:**

1. NCP:
   §300.500-300.525, State Involvement in Removal Actions
   §300.525, State Involvement in Hazardous Substance Response
2. 40 CFR Part 35, Subpart O, Cooperative Agreements and Superfund State Contracts for Superfund Response Actions
3. 40 CFR §35.6200-6205, Removal Response Cooperative Agreements
4. 40 CFR §35.6240-6255, Support Agency Cooperative Agreements
5. OSWER Publication 9203.1-05I, Volume 1, Number 5, "SACM Regional Decision Teams—Interim Guidance" (December 1992), PB93-963266.
6. OSWER Publication 9360.2-02, "Policy on Management of Post-Removal Site Control" (December 3, 1990), PB91-921326/CCE.
7. OSWER Publication 9360.3-06, "Superfund Removal Procedures—Removal Enforcement Guidance for On-Scene Coordinators" (April 1992), PB92-963409.

## 1.4 RESOURCES

A number of resources can provide technical assistance to the lead agency carrying out a non-time-critical removal action. These include national, Regional, and specialized response teams; contractors; other Federal agencies; and State and local governments. Section 300.145 of the NCP describes special teams and other assistance available to OSCs/RPMs.

In addition, Superfund's Long-Term Contracting Strategy (LTCS) (OSWER Publication 9242.6-07, "Approval of Long-Term Contracting Strategy for Superfund [Superfund Management Review: Recommendations E.2]" [August 1990]), PB90-273822/CCE, provides OSCs/RPMs with mechanisms for greater flexibility in selecting contract support and improves oversight and cost management by giving the Regions full responsibility for contracts management. This strategy provides a road map to Superfund contractor support. The LTCS anticipated many of the underlying principles of SACM. For example, the increase in early action responses will be aided by the newly created Emergency and Rapid Response Services (ERRS) contracts. The LTCS also combines site assessment and removal technical assistance functions under single Superfund Technical Assessment and Response Team (START) contracts. The LTCS envisions that the Agency's non-time-critical removal actions will be performed using Response Action Contracts (RACs). Available contracting vehicles and capacities will affect the strategy for conducting both early and long-term actions under SACM. The process of developing these and other new contracts has begun and will continue over the next several years, consistent with the phase-in of SACM.

Currently, a variety of contractor resources is available to OSCs/RPMs. OSWER Publication 9200.5-402A, "Contracting and Subcontracting Guide to the Superfund Program" (May 1992), EPA/540/G-91/012, PR-923, lists available contractor firms in each Region and individuals to contact for information on available contracts.

## 1.4 RESOURCES (CONTINUED)

**For More Information:**

1. NCP §300.145, Special Teams and Other Assistance Available to OSCs/RPMs
2. OSWER Publication 9200.5-402A, "Contracting and Subcontracting Guide to the Superfund Program" (May 1992), EPA/540/G-91/012, PR 923.
3. OSWER Publication 9240.01-01D, "User's Guide to the Contract Laboratory Program" (January 1991), EPA/540/P-91/002, PB91-921278.
4. OSWER Publication 9242.2-01B, "Emergency Response Cleanup Services (ERCS) Contracts: User's Manual" (October 1987), PB90-191966/CCE.
5. OSWER Publication 9242.2-02, "Site-Specific Contracting for Removals" (April 10, 1989), PB91-215053/CCE.
6. OSWER Publication 9242.6-01, "ARCS Work Assignment Management, Field Guide" (January 1989), PB91-214965/CCE.
7. OSWER Publication 9242.6-07, "Approval of Long-Term Contracting Strategy for Superfund (Superfund Management Review: Recommendations E.2)" (August 1990), PB90-273822/CCE.
8. OSWER Publication 9360.6-08, "Technical Assistance Team (TAT) Contracts Users' Manual" (October 1991), PB92-963407.

## 1.5 ENFORCEMENT AND COST RECOVERY

### PRP Search and Identification

EPA expects much of the early site assessment activities to be Fund-lead. However, changes to PRP-lead can occur during site assessment, prior to the EE/CA, or prior to initiating the non-time-critical removal action. The increased pace of response under SACM's integrated assessment process may require that the enforcement team work faster and devote more resources to PRP search and identification early in the process. This may lead to changes in PRP search methodology and, therefore, require less time to complete the PRP search than the current process.

### Notice Letters

For time-critical and emergency removal actions, the time available to conduct enforcement activities will be limited, and notice letters will typically be issued simply to notify the PRP of its potential liability or to encourage informal negotiations. However, in many instances, formal negotiations may be more appropriate for non-time-critical removal actions. Regions may use CERCLA section 122(e) special notice letters for non-time-critical removal actions whenever practicable unless use of such procedures would interfere with the Agency's ability to implement a response in an expeditious manner. When deciding the appropriateness of using CERCLA section 122(e) special notice procedures, OSCs should consider whether viable PRPs have been identified, and whether identified PRPs are expected to respond favorably to the invitation to negotiate.

Issuance of the CERCLA section 122(e) special notice letter triggers a 60- to 120-day moratorium on on-site response activities under CERCLA section 104(a), including conducting the RI/FS. However, this does not mean that all activity related to the non-time-critical removal falls under the moratorium. Pursuant to section 122(e)(2)(A), the Agency may commence any

additional studies or investigations authorized under section 104(b) during the negotiation period. Since EE/CAs are considered CERCLA section 104(b) studies, preparation of the EE/CA may continue during the moratorium. Under this moratorium, if the PRP does not provide EPA with a good faith offer, the moratorium ends after 60 days.

Whenever EPA decides to forego use of CERCLA section 122(e) special notice procedures, CERCLA section 122(a) requires EPA to notify the PRP in writing of the reasons why formal negotiations are inappropriate. OSCs issuing such notice should refer to Appendix D, which presents a model Notice of Decision Not to Use Special Notice Procedures.

### PRP Negotiation

Preparing certain documents before negotiations ensures that EPA will enter negotiations with a well-defined plan for PRP or agency response. One of the goals of negotiations is to develop an Administrative Order on Consent (AOC). The AOC may contain a workplan as an attachment. The AOC also might require the PRP to draft a detailed workplan as a first deliverable. AOCs should contain reimbursement provisions for past costs and oversight costs, where appropriate. If the initial removal assessment indicates that a non-time-critical removal action should be taken, the Region could negotiate an order with the PRPs for the EE/CA and include the eventual non-time-critical removal action in the order under CERCLA section 106 authority.

For non-time-critical removal actions, sufficient time is usually available to negotiate consent agreements with the PRP. However, if the PRP does not respond to notice letters or refuses to sign an AOC, EPA has the authority to proceed with a Fund-lead response or under CERCLA section 106, where an imminent and substantial endangerment exists, to issue a Unilateral Administrative Order (UAO) requiring a PRP to perform the removal action.

It is generally anticipated that by using SACM's phased PRP search approach, as described in OSWER Publication 9203.1-05I, Volume I, Number 3, "Enforcement Under SACM—Interim Guidance" (December 1992), PB93-963264, there will be sufficient time before initiating non-time-critical removal actions to allow those actions to be PRP-lead. For example, if the RDT decides, based on the early results of a PRP search, to initiate a Fund-lead EE/CA to support a non-time-critical removal action, the Region can continue PRP search activities during the EE/CA. After completing the EE/CA, the RDT can decide, based on supplemental PRP data, to seek PRP participation in conducting the non-time-critical removal action.

### Cost Recovery

The statute of limitations for cost recovery for removal actions is 3 years from the completion of the removal action, unless a consistency exemption to the statutory limits under CERCLA section 104(c)(1)(C) has been approved. (In these circumstances, the statute of limitations is 6 years from the date of the last exemption.) A consistency exemption may be sought if the continued response action under CERCLA removal authorities is appropriate and consistent with the remedial action to be taken (see OSWER Publication 9360.0-12A, "Final Guidance on Implementation of the 'Consistency' Exemption to the Statutory Limits on Removal Actions" [June 12, 1989], PB90-274465/CCE). EPA's past costs should be sought in negotiations with PRPs, when appropriate. A decision not to pursue cost recovery must be documented in a Removal Action Cost Recovery Close-Out Memorandum prepared in consultation with the Office of Regional Counsel (ORC).

## 1.5 ENFORCEMENT AND COST RECOVERY (CONTINUED)

**For More Information:**

1 CERCLA:
§106, Abatement Actions
§122(e), Special Notice Procedures
2. OSWER Publication 9200.3-01H-1, "Superfund Program Implementation Manual 1993" (June 1993), PB92-963276.
3. OSWER Publication 9203.1-05I, Volume 1, Number 3, "Enforcement Under SACM—Interim Guidance" (December 1992), PB93-963264.
4. OSWER Publication 9360.0-12A, "Final Guidance on Implementation of the 'Consistency' Exemption to the Statutory Limits on Removal Actions" (June 12, 1989), PB90-274465/CCE.
5. OSWER Publication 9360.2-04, "Authorization for Regional Administrators to Approve Consistency Exemption at NPL Sites" (February 24, 1992), PB92-963343.
6. OSWER Publication 9360.3-01, "Superfund Removal Procedures—Action Memorandum Guidance" (December 1990), EPA/540/P-90/004, PB90-274473.
7. OSWER Publication 9360.3-06, "Superfund Removal Procedures—Removal Enforcement Guidance for On-Scene Coordinators" (April 1992), PB92-963409.
8. OSWER Publication 9832.0-1A, "Procedures for Documenting Costs for CERCLA Section 107 Actions" (January 30, 1985), PB91-138958/CCE.
9. OSWER Publication 9832.1, "Cost Recovery Actions Under CERCLA" (August 26, 1983), PB91-138966/CCE.
10. OSWER Publication 9832.11, "Guidance on Documenting Decisions Not to Task Cost Recovery Actions" (June 7, 1988), PB91-139048/CCE.
11. OSWER Publication 9832.13, "Superfund Cost Recovery Strategy" (July 29, 1988), PB91-139063/CCE.
12. OSWER Publication 9833.0-1A, "Guidance on CERCLA Section 106(a) Unilateral Administrative Orders for Remedial Designs and Remedial Actions" (March 13, 1990), PB91-139089/CCE.
13. OSWER Publication 9834.10, "Interim Guidance on Notice Letters, Negotiations, and Information Exchange" (October 19, 1987), PB91-139253/CCE.
14. OSWER Publication 9834.10-1b, "Model Notice Letters" (February 7, 1989), PB91-139279/CCE.
15. OSWER Publication 9837.2B, "Enforcement Project Management Handbook: FY1993 Update" (May 1993), PB93-963602.
16. Superfund Indirect Cost Manual, Financial Management Division, Office of the Comptroller (July 1991).

## 1.6 PUBLIC INVOLVEMENT AND THE ADMINISTRATIVE RECORD

As with all CERCLA actions, early and frequent involvement of the public, including involvement above and beyond the requirements, is crucial to expedited cleanups under SACM.

Public involvement activities in Superfund promote communication between members of the public, including PRPs, and the lead government agency responsible for removal or remedial actions. Public involvement activities should be tailored to the needs of the community as well as to the technical action schedule.

Section 113(k)(2) of CERCLA provides for involving communities affected by response decisions at Superfund sites. Public involvement in the Superfund program, as a whole, consists of public outreach activities conducted throughout the planning and implementation of Superfund removal and remedial responses.

Since removal actions generally proceed quickly, there is less time to plan or conduct public participation activities than during remedial responses. Sections 300.415(m) and 300.820 of the NCP specify two forms of public participation for all removal actions:

- Community relations activities—designed to integrate the information needs of the community into the communications approach or community relations plan for the site.
- Administrative record activities—designed to chronicle the basis for the response selection and serve as a vehicle for public participation in the removal action.

### Community Relations Requirements

The NCP and CERCLA outline a variety of community relations requirements to promote communication. The following are requirements for non-time-critical removal actions:

- Designate Community Relations Spokesperson. This person shall inform the community of actions taken, respond to inquiries, and provide information concerning the release.
- Conduct Community Interviews. Before completing the EE/CA, the lead agency must conduct community interviews to gather background information for the Community Relations Plan (CRP). The purpose of these interviews is to solicit information about community concerns, information needs, and how or when citizens would like to be involved in the removal action.
- Prepare CRP. Pursuant to sections 300.415(m)(4), 300.415(m)(4)(i), and 300.415(m)(3)(ii) of the NCP, a CRP must be prepared before the EE/CA is completed. The CRP is a site-specific document that relates the community relations techniques and approaches deemed appropriate and relevant to the site.
- Establish Information Repository. The information repository must be established no later than the signing of the EE/CA Approval Memorandum (see Chapter 2). The repository is a project file or collection of materials relating to the specific Superfund site and to the Superfund program in general. The administrative record file is included in the repository.
- Provide Public Notice of Availability of EE/CA. A public notice describing the Agency's preferred alternative and EE/CA results (see Chapter 2) and announcing

## 1.6 PUBLIC INVOLVEMENT AND THE ADMINISTRATIVE RECORD (CONTINUED)

its availability for review and comment must be published in a major local newspaper. The EE/CA is part of the administrative record file.

### Administrative Record Requirements

The administrative record file, a subset of the site file, is the body of documents EPA uses to form the basis for the selection of a response. It should not be confused with the administrative record, which is not complete until a response action has been selected. The administrative record file, as provided in section 300.820 of the NCP, may include site-specific data and comments, documents which were considered or relied on to select the removal action, guidance documents, technical references, and documents that reflect the views of the public, including PRPs, concerning the selection of a removal action. A strong administrative record helps ensure cost recovery, helps uphold EPA's remedy selection, and helps limit litigation-related information gathering discovery. For non-time-critical removal actions, the EE/CA Approval Memorandum, the EE/CA, and the Action Memorandum are critical components of the administrative record file. The administrative record closes once the decision document, in the case of a non-time-critical removal action the Action Memorandum, is signed. The record will reopen if the Action Memorandum is amended. The required administrative record activities for non-time-critical removal actions are:

- Establish the Administrative Record File. The administrative record file must be established no later than the signing of the EE/CA Approval Memorandum. The OSC/RPM, as the lead for on-site activity, is responsible for compiling and maintaining the administrative record in accordance with the NCP. The administrative record file must be made available for public inspection and copying when the EE/CA is made available for public comment at a central location at or near the site.

- Publish Notice of Availability of the Administrative Record File. A public notice must be published when the EE/CA is placed in the administrative record file and is available for comment. Additionally, if the notice also is used to announce a public comment period on the EE/CA, then it must state that upon timely receipt of a request (defined in the NCP preamble as generally within 2 weeks after the public comment period starts, but it may be considered valid if received within the 30-day period), the comment period will be extended a minimum of 15 additional days.

- Hold Public Comment Period. For non-time-critical removal actions, the NCP requires a 30-day public comment period on the EE/CA and any supporting documentation (including fact sheets or other documents summarizing the alternatives under consideration) at the time the EE/CA is made available for public comment.

- Develop Written Response to Significant Comments. After the public comment period is over, the OSC/RPM is required to prepare a written response to significant comments received during the comment period. The response to comments should be included in the administrative record file.

## 1.6 PUBLIC INVOLVEMENT AND THE ADMINISTRATIVE RECORD (CONTINUED)

**For More Information:**

1. CERCLA §113(k)(2), Participation Procedures
2. NCP:
   §300.415(m), Community Relations in Removal Actions
   §300.810, Contents of the Administrative Record File
   §300.820, Administrative Record File for a Removal Action
   §300.825, Record Requirements After the Decision Document is Signed
3. OSWER Publication 9230.0-03C, "Community Relations in Superfund: A Handbook" (January 1992), EPA/540/R-92/009, PB92-963341.
4. OSWER Publication 9360.3-05, "Superfund Removal Procedures—Public Participation Guidance for On-Scene Coordinators: Community Relations and the Administrative Record" (June 1992), PB92-963416.
5. OSWER Publication 9833.3A-1, "Final Guidance on Administrative Records for Selection of CERCLA Response Actions" (December 3, 1990), PB91-139121/CCE.
6. OSWER Publication 9836.0-1A, "Community Relations During Enforcement Activities and Development of the Administrative Record" (November 3, 1988), PB91-139519/CCE.

## 1.7 ACTION MEMORANDUM

An Action Memorandum provides a concise, written record of the decision to select an appropriate removal action. Exhibit 2, on the following page, provides an outline of the information that should be included in the Action Memorandum. As the primary decision document, it substantiates the need for a removal action, identifies the proposed action, and explains the rationale for the removal action selection. In this respect, the Action Memorandum for removal actions parallels the function of the Record of Decision (ROD), which documents the final action plan for a remedial response; however, the Action Memorandum is not as elaborate as the ROD. An Action Memorandum may also reserve the appropriate funding needed for the proposed removal action.

Action Memoranda follow a standard format. Specific topics must be addressed in the Action Memorandum to demonstrate that the release meets statutory and NCP requirements for a removal action. For non-time-critical removal actions, an EE/CA summary or the EE/CA Executive Summary, the EE/CA Approval Memorandum or a summary thereof, and a summary of the written comments on the EE/CA for alternative actions considered for non-time critical removal actions should be part of the "Proposed Actions and Estimated Costs" section of the Action Memorandum. In addition, a copy of the EE/CA, or the Executive Summary, and the Agency's response to significant public comments on the EE/CA should be attachments to the Action Memorandum and become part of the administrative record file.

**EXHIBIT 2**
**Action Memorandum Outline**

**I. Purpose**

**II. Site Conditions and Background**
- A. Site Description
  1. Removal site evaluation
  2. Physical location
  3. Site characteristics
  4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant
  5. NPL status
  6. Maps, pictures, and other graphic representations
- B. Other Actions
  1. Previous actions
  2. Current actions
- C. State and Local Authorities' Roles
  1. State and local actions to date
  2. Potential for continued State/local response

**III. Threats to Public Health or Welfare or the Environment, and Statutory and Regulatory Authorities**
- A. Threats to Public Health or Welfare
- B. Threats to the Environment

**IV. Endangerment Determination** (see page 16 of Action Memorandum Guidance)*

**V. Proposed Actions and Estimated Costs**
- A. Proposed Actions
  1. Proposed action description
  2. Contribution to remedial performance
  3. Description of alternative technologies
  4. Engineering Evaluation/Cost Analysis (EE/CA)
  5. Applicable or relevant and appropriate requirements (ARARs)
  6. Project schedule
- B. Estimated Costs

**VI. Expected Change in the Situation Should Action Be Delayed or Not Taken**

**VII. Outstanding Policy Issues**

**VIII. Enforcement**

**IX. Recommendation**

**Enforcement Addendum**

**Attachments**

* OSWER Publication 9360.3-01, "Superfund Removal Procedures—Action Memorandum Guidance" (December 1990), EPA/540/P-90/004, PB90-274473.

## 1.7 ACTION MEMORANDUM (CONTINUED)

**For More Information:**

OSWER Publication 9360.3-01, "Superfund Removal Procedures—Action Memorandum Guidance" (December 1990), EPA/540/P-90/004, PB90-274473.

## 1.8 ON-SCENE COORDINATOR REPORTS

As currently stated in section 300.165 of the NCP, within 1 year after completion of removal activities involving a major release, or when requested by the Regional Response Team (RRT), the OSC/RPM must submit to the RRT a complete report on the removal operation and the actions taken. A copy of the report must also be sent to the Secretary of the National Response Team (NRT). The report shall record the situation as it developed, the actions taken, the resources committed, and the problems encountered.

There is an established format for OSC reports set out in section 300.165 of the NCP. The report must contain the following:

- Summary of Events—a chronological narrative of all events, including:
  - Location of the hazardous substance
  - Cause of the discharge or release
  - Initial situation
  - Efforts to obtain response by responsible parties
  - Organization of the response, including State participation
  - Resources committed
  - Content and time of notice to natural resources trustees
  - Federal or State trustee damage assessment activities and efforts to replace or restore damaged natural resources
  - Details of any threat abatement action taken
  - Treatment/disposal/alternative technology approaches pursued and followed
  - Public information/community relations activities.
- Effectiveness of removal actions taken by:
  - Responsible party(ies)
  - State and local entities
  - Federal agencies and special teams
  - Contractors, private groups, and volunteers (if applicable).
- Difficulties encountered—a list of items that affected the response, with particular attention to issues of intergovernmental coordination.

## 1.8 ON-SCENE COORDINATOR REPORTS (CONTINUED)

- Recommendations, including:
  - Means to prevent a recurrence of the discharge or release
  - Improvement of response actions
  - Recommended changes in the NCP, regional contingency plan, area contingency plan, OSC contingency plan or other local emergency response plans.

# CHAPTER 2

# CONDUCTING THE ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)

## 2.1 OVERVIEW

In 1987, the Emergency Response Division began development of the first draft guidance on Engineering Evaluations/Cost Analyses (EE/CAs) for non-time-critical removal actions. Because issuance of a final EE/CA guidance was delayed pending the outcome of issues related to the NCP revisions, in 1988 a draft outline was distributed to assist the Regions in preparing EE/CAs. This chapter replaces the 1988 memo to help the Regions in fulfilling the goals of the EE/CA, which are to:

- Satisfy environmental review requirements for removal actions
- Satisfy administrative record requirements for improved documentation of removal action selection
- Provide a framework for evaluating and selecting alternative technologies.

Non-time-critical removal actions will be the appropriate response for a variety of sites and will range in scope from small-scale, low-cost actions to complicated multi-media response actions requiring exemptions from the statutory time and/or dollar limits. Non-time-critical removal actions may be interim or final actions; they may be the first and only action at a site, or one of a series of planned response actions. The scope of the non-time-critical removal action will determine the detail of the EE/CA. The EE/CA is a flexible document tailored to the scope, goals, and objectives of the non-time-critical removal action. It should contain only those data necessary to support the selection of a response alternative, and rely upon existing documentation whenever possible.

The range of site characteristics affecting the non-time-critical removal action forms a continuum. At one end are sites where the non-time-critical removal action is the first and only action expected at a site and where no other data are available. In this case, the EE/CA should provide definitive information on the source, nature, and extent of contamination, and risks presented by the site. At the other end of the continuum are sites where the non-time-critical removal action is one of a series of response actions, where a completed RI is or will be available, and where the nature and extent of contamination and the risk presented by the site have been or will be determined. In this case, the EE/CA would be similar to a focused FS, concentrating on the analysis of perhaps two or three appropriate alternatives and providing reference to existing information on the nature and extent of contamination and risks.

Many non-time-critical removal actions may occur at sites with characteristics that fall within these extremes. OSCs/RPMs should tailor the EE/CA to match the specific goals and objectives of the non-time-critical removal action planned for a given site. The goals of the removal should be based on the relevant factor(s) listed in sections 300.415(b)(2)(i)-(viii) of the NCP. The relevant factors should be cited in the EE/CA Approval Memorandum as justification for conducting the EE/CA. The scope of the action takes into account two major considerations: the physical portion of the site to be addressed and whether the action represents a final or interim step toward addressing a particular exposure pathway.

## 2.1 OVERVIEW (CONTINUED)

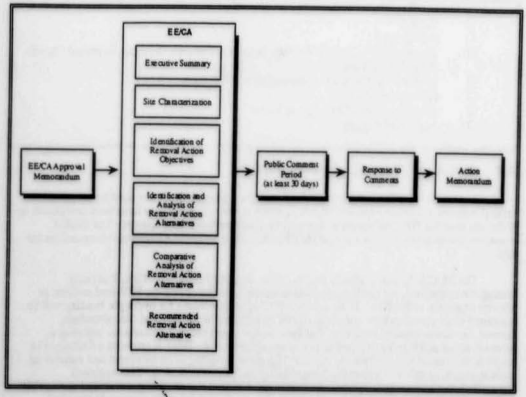
Specific objectives are then developed for the site. Removal action objectives generally consist of environmental medium-specific goals for protecting human health and the environment. The objectives should be as specific as possible, but not so specific that the range of alternatives that can be developed is unduly limited. Removal action objectives should identify, for example, the contaminants of concern and exposure route(s) and receptor(s).

The scope of the non-time-critical removal action (e.g., an interim action conducted during an ongoing remedial effort) and the specific objectives determine the information to be collected during the EE/CA. Accordingly, qualitative risk information that identifies pathways of concern and concentrations of contaminants above standards could have been documented at the site during the RI, and may be referred to in the EE/CA; a separate risk assessment is not necessary to support the non-time-critical removal action. Data to characterize the nature and extent of contamination should be limited to those needed to support the specific objectives of the non-time-critical removal action, supplementing existing data (e.g., the existing RI/FS) to the extent appropriate. Finally, an initial screening of alternatives generally will not be necessary; only a few viable alternatives relevant to the EE/CA objectives should be identified and analyzed.

As noted in Chapter 1, an EE/CA must be completed for all non-time-critical removal actions under CERCLA as required by section 300.415(b)(4)(i) of the NCP. The goals of the EE/CA are to identify the objectives of the removal action and to analyze the effectiveness, implementability, and cost of various alternatives that may satisfy these objectives. Thus, an EE/CA serves an analogous function, but is more streamlined than the RI/FS conducted for remedial actions. Soliciting and responding to public comments on the administrative record, including the EE/CA, is required by section 300.820(a) of the NCP. (See Appendix C for a side-by-side comparison of the EE/CA process and the RI/FS process.)

The results of the EE/CA, along with EPA's response decision, are summarized in the Action Memorandum. The costs of performing an EE/CA, which is considered a CERCLA section 104(b)(1) study, are not counted toward the $2 million statutory limit on removal actions. Exhibit 3, on the following page, depicts the process for developing an EE/CA.

**EXHIBIT 3**
**EE/CA Development Process**




This chapter provides guidance on the components of the EE/CA Approval Memorandum, as shown in Exhibit 4, on the following page, and the EE/CA, as shown in Exhibit 5. The chapter discusses and provides checklists for each section of the EE/CA; however, each section can be modified to satisfy special requirements of the removal action or to justify the selection of a specific alternative.

**For More Information:**

1. CERCLA §104(b)(1), Information; Studies and Investigations
2. NCP:
   §300.415, Removal Action
   §300.415(b)(2), Appropriateness Factors
   §300.415(b)(4)(i), EE/CA Requirement

**EXHIBIT 4**
**EE/CA Approval Memorandum**

- ❑ Subject
- ❑ Background
- ❑ Threat to Public Health, Welfare, or the Environment (Includes Expected Change If No Action Taken)
- ❑ Imminent and Substantial Endangerment If Present
- ❑ Enforcement Actions
- ❑ Proposed Project/Oversight and Cost
- ❑ Approval/Disapproval

## 2.2 EE/CA APPROVAL MEMORANDUM

In general, the EE/CA Approval Memorandum is prepared once the need for a non-time-critical removal action has been determined; a removal site evaluation may have been completed, or if the site is on the NPL, information may also be available from other sources. The EE/CA Approval Memorandum is not a part of the EE/CA, but is part of the administrative record for the site.

The EE/CA Approval Memorandum serves important functions. First, it secures management approval and funding approval to conduct the EE/CA or, for PRP-lead actions, to provide oversight of EE/CAs. If the action is PRP-lead, provisions for oversight funding will be contained in an administrative order and should be included in an Approval Memorandum. Second, the memorandum documents that the situation meets the NCP criteria for initiating a removal action and that the required action is non-time-critical. Third, it provides a finding of an actual or threatened release from the site and, if present, a finding of an imminent and substantial endangerment, or refers to a document establishing such a determination. The Approval Memorandum also provides general information pertaining to the site background; threats to public health, welfare, or the environment posed by the site (including expected changes in the site situation if no action is taken or if the action is delayed); enforcement activities related to the site; and estimated EE/CA costs.

The EE/CA Approval Memorandum should indicate a current or potential threat to public health, welfare, or the environment. The memorandum should focus on providing sufficient information that such a threat or potential threat could exist, while the EE/CA will provide the information for EPA to determine that such a threat or potential threat actually exists. The preliminary identification of exposures is based on information obtained from the PA or SI and possibly other previous investigations. The OSC/RPM should develop a conceptual site model as a starting point for this analysis. The model identifies potential releases, potential areas of contamination, chemicals of concern, possible routes of exposure, possible routes of contaminant transport, and potential exposure pathways.

This potential for exposure indicates the likelihood of meeting the NCP criteria for taking a removal action, which in turn justifies the need for conducting the EE/CA. For example, risk consideration can identify the possibility of exposure of nearby populations, animals, or the food chain to hazardous substances, pollutants, or contaminants. Similarly, this preliminary risk

## 2.2 EE/CA APPROVAL MEMORANDUM (CONTINUED)

information may also indicate the possibility of contamination of drinking water or sensitive environments or other situations or factors that may pose threats to public health, welfare, or the environment.

The Regional Administrator (or authorized designee) evaluates the EE/CA Approval Memorandum and provides authorization. Funds expended to prepare an EE/CA Approval Memorandum are CERCLA 104(b)(1) monies and are not counted toward the $2 million statutory limit for removal actions.

**For More Information:**

1. CERCLA §104(b)(i), Information; Studies and Investigations.
2. NCP:
   §300.415(m)(4)(i), Community Relations
   §300.415(b)(4), EE/CA Requirement

**EXHIBIT 5**
**EE/CA Outline**

- ☐ Executive Summary
- ☐ Site Characterization
  - ☐ Site description and background
  - ☐ Previous removal actions
  - ☐ Source, nature, and extent of contamination
  - ☐ Analytical data
  - ☐ Streamlined risk evaluation
- ☐ Identification of Removal Action Objectives
  - ☐ Statutory limits on removal actions
  - ☐ Determination of removal scope
  - ☐ Determination of removal schedule
  - ☐ Planned remedial activities
- ☐ Identification and Analysis of Removal Action Alternatives
  - ☐ Effectiveness
  - ☐ Implementability
  - ☐ Cost
- ☐ Comparative Analysis of Removal Action Alternatives
- ☐ Recommended Removal Action Alternative

## 2.3 EE/CA EXECUTIVE SUMMARY

The EE/CA Executive Summary provides a general overview of the contents of the EE/CA. It should contain a brief discussion of the site and the current or potential threat posed by site

## 2.3 EE/CA EXECUTIVE SUMMARY (CONTINUED)

conditions. The Executive Summary should also identify the scope and objectives of the removal action, as well as the removal action alternatives. Finally, this section of the EE/CA should provide information on the recommended removal action alternative.

The Executive Summary is intended to make the contents of the EE/CA more accessible to review by the public, and is analogous in this respect to the Proposed Plan used in the remedial process. This summary can then be used in the Action Memorandum, which should include a description of the EE/CA.

## 2.4 SITE CHARACTERIZATION

The EE/CA should summarize available data on the physical, demographic, and other characteristics of the site and surrounding areas. These data may be available from a removal site evaluation, from previous investigations, or from other EPA activities at the site (e.g., work in preparation for NPL listing). Documents providing information for the EE/CA should be placed in the administrative record for the site. Whatever the source, the data on the site must provide background engineering information for analysis of removal alternatives. Because of the CERCLA preference for treatment over containment or land disposal, it is important that alternatives that employ treatment and that yield permanent solutions be fully evaluated for non-time-critical removal actions and early remedial actions. Furthermore, potential differences between early action and long-term action data quality objectives and risk assessment goals should be reconciled as early as possible. Therefore, EPA should coordinate activities of the OSC/RPM with those of the site assessment manager, risk assessor, and enforcement/legal staff to ensure appropriate data are collected to characterize the site.

Information about the site may be readily available from many sources, including:

- Scoring packages for NPL sites
- Removal site evaluations
- Remedial PA/SI reports
- EE/CA Approval Memoranda
- RI/FSs
- RODs
- State and local government reports
- The Agency for Toxic Substances and Disease Registry (ATSDR) or State public health agencies
- State Historic Preservation Officer
- Environmental Impact Statements (EISs)
- CERCLA section 104(e) information requests
- Newspaper articles
- Resource Conservation and Recovery Act (RCRA) enforcement actions
- Published engineering evaluations and technical reference documents
- Documents from other Federal agencies, such as U.S. Geological Survey (USGS) maps and Federal Emergency Management Agency evacuation reports
- Company records
- Employee interviews
- EPCRA—Toxic Release Inventory data.

## 2.4 SITE CHARACTERIZATION (CONTINUED)

### Site Description and Background

The site description includes current and historical information. This information may help identify hazardous substances, pollutants, or contaminants of concern, or areas of the site requiring additional sampling. In gathering this information, OSCs/RPMs should review State, local, and Federal permit files, construction records, and local deed records for information on previous owners to determine materials produced, stored, or disposed of at the site. CERCLA section 104(e) information requests should also be considered. In addition, interviews should be conducted, as necessary, with neighbors of the site or past employees who can describe past operational practices or identify other past employees. The site background may include historical and aerial photographs. The EE/CA should document these data to convey a clear understanding of the nature of the site.

The site description section of the EE/CA should include the following types of information where available and as appropriate to the site-specific conditions and the scope of the removal action:

- Site location
  - Street address and crossroads
  - USGS topographic map quadrangle
  - Latitude/longitude
- Type of facility and operational status
  - Materials manufactured, stored, or disposed on-site
  - Estimated quantities of contaminants and potential hazards
  - Years of operation
  - Present/prior site use
  - Regulatory history, including previous responses, investigations, and litigation by State, local, and Federal agencies
- Structures/topography
  - Facility size/dimensions
  - Boundary descriptions
  - Land cover/vegetation/stresses to topography
  - Utilities/transportation features
  - Buildings
  - Surface water bodies/conveyances
  - Drainage channels/pathways
  - Historically/archaeologically significant features
  - Sewer lines/manholes
  - Stormwater drainage pipes
  - Open ditches/canals
  - Power lines/pipelines
- Geology/soil information
  - Depth to aquifer
  - Soil types (surface and vadose zones)
  - Local geological formulations
  - Surface water hydrology and hydrogeology

## 2.4 SITE CHARACTERIZATION (CONTINUED)

- Surrounding land use and populations
  - Residential, industrial, or commercial land use
  - Possible pathways of exposure
  - Identification of sensitive populations
  - Estimate of population densities within potentially affected radius
  - Description of drinking water sources
  - National Historic Preservation Act considerations
- Sensitive ecosystems
  - Wetlands, wildlife breeding areas
  - Wild and scenic rivers
  - Connection to the human food chain or food chains of other organisms
  - Sensitive and/or endangered species
  - Coastal zones
- Meteorology
  - Rainfall/snowfall
  - Temperature ranges
  - Wind conditions

### Previous Removal Actions

The site characterization section of the EE/CA should also describe any previous removal actions at the site. Exhibit 6, on the following page, shows useful information that may be obtained from a previous removal action and its applicability to the current EE/CA. Previous information, if relevant, may be organized as follows:

- The scope and objectives of the previous removal action
- The amount of time spent on the previous removal action
- The amount of money spent on the previous removal action
- The nature and extent of hazardous substances, pollutants, or contaminants treated or controlled during the previous removal action
- The technologies used and/or treatment levels used for the previous removal action.

Like all documents that serve as the basis for Superfund decisions, EE/CAs are subject to public review and must be part of the administrative record. Although confidential and enforcement-sensitive documents are typically not relied upon in selecting response actions, when they are relied upon they should be contained in a separate confidential portion of both the EE/CA and the administrative record. Confidential information includes the following:

- Trade secrets, commercial or financial information
- State secrets
- Confidential informant files
- Privacy Act privileged information, attorney-client privileged information, and attorney work product privileged information
- Information exempted by other statutes.

## 2.4 SITE CHARACTERIZATION (CONTINUED)

Enforcement-sensitive information that generally should not be placed in the administrative record file includes:

- Financial status of PRPs
- Record of previous negotiations with PRPs and the results
- Investigatory files relating to law enforcement
- Additional information on enforcement history, strategy, discussion, and recommendations.

**EXHIBIT 6**
**Information From Previous Removal Actions Applicable To Current EE/CA**

| Information From Previous Removals | Applicability To Current EE/CA |
|---|---|
| Nature and Extent of Contaminants | This information may allow the OSC/RPM to narrow the scope of evaluation to certain areas of the site or to specific analyses. |
| Treatability of Compounds | Previous use of a technology may affect the decision to use the same technology again. |
| Equipment/Utilities at Site | If the previous removal action resulted in supplies and equipment being left at the site or provision of specific utilities (e.g., electrical power, sewer line), this information may affect the choice of treatment/control options employed. |
| Site-Specific Conditions | Lessons learned from a previous removal action are valuable to the current EE/CA. Specific examples could include seasonal weather patterns affecting technology applications or site access limitations because of vehicle transportation routes. |

### Source, Nature, and Extent of Contamination

To the extent possible, site characterization data should be gathered during the removal site evaluation to support the EE/CA, unless such data were gathered in prior investigations. Existing information may be useful in determining the location(s) of contamination at a particular site. This information may include:

- Location(s) of the hazardous substance(s), pollutant(s), or contaminant(s)
- Quantity, volume, size, or magnitude of the contamination
- Physical and chemical attribute(s) of the hazardous substance(s), pollutant(s), or contaminant(s)
- Target(s) potentially affected by the site.

## 2.4 SITE CHARACTERIZATION (CONTINUED)

The source of the contamination for a removal action is often well defined. However, if the source, nature, and extent of contamination cannot be readily identified, the OSC/RPM should survey the area. Contamination sources and locations can often be determined by:

- Using nonanalytical methods, including geophysical surveys, which may indicate the presence of buried objects, such as drums
- Examining aerial photographs (especially those taken over a period of time), which may indicate land areas or drainage patterns that have been disturbed
- Reviewing past operations and information from the Toxic Release Inventory and interviewing past or current employees, which may help determine the source of contamination.

If contamination is found in a containment vessel (e.g., under- or above-ground storage tanks, drums, lagoons), the integrity of the vessels should be determined. The integrity may have an impact on the selection of the removal action.

### Analytical Data

The analytical data section presents quantifiable data collected for the EE/CA. This section begins with existing data and expands as additional data are collected. When sufficient data are collected, significant findings should be presented in a narrative discussion. The actual data can be presented in tables, either within the section or in an appendix, or incorporated by reference to the document containing the data.

Sampling should typically be performed in accordance with accepted EPA and Contract Laboratory Program (CLP) protocols. Where feasible, sampling should be coordinated through the integrated assessment approach of SACM. Where a SACM approach is used, appropriate data quality objectives should be used for decisions in support of remedial and removal actions. If the site is not already on the NPL, sample collection and analysis should generally ensure that data generated will also support assessment of whether NPL listing and remedial action are appropriate.

Analytical data from studies conducted by EPA or other groups (e.g., State or local health or environmental authorities or PRPs) are useful in characterizing the site. Reviewing any soil, water, or waste analyses will help OSCs/RPMs determine the precision, accuracy, representativeness, completeness, and comparability of previous sampling. These parameters can be evaluated by examining the results of routine quality control procedures, such as replicate samples and/or analyses, replicate spiked samples and/or analyses, field blanks, method blanks, and analysis of standard reference materials.

To reflect SACM's integrated assessment approach, future guidance will further address data collection and analysis to support removal actions, early remedial actions, and long-term actions. The Environmental Response Team (ERT) is currently developing integrated guidance on air, waste, and water sampling, and ecological assessment. All data used to justify a non-time-critical action should be supported by quality control data. Furthermore, these data should be

evaluated based on quality assurance documentation. Following this quality assurance and control process, data can be compared to existing health- or risk-based standards to determine the nature of the threat to public health, welfare, or the environment.

### Streamlined Risk Evaluation

The streamlined risk evaluation is a new type of evaluation, intermediate in scope between the limited risk evaluation undertaken for emergency removal actions and the conventional baseline assessment normally conducted for remedial actions. This streamlined risk evaluation can help justify taking a removal action and identify what current or potential exposures should be prevented. The risk evaluation uses sampling data from the site to identify the chemicals of concern, provides an estimate of how and to what extent people might be exposed to these chemicals, and provides an assessment of the health effects associated with these chemicals. A streamlined risk evaluation projects the potential risk of health problems occurring if no cleanup action is taken at a site. Therefore, the results of the streamlined risk evaluation help EPA decide whether to take a cleanup action at the site, what exposures need to be addressed by the action, and in some cases define appropriate cleanup levels.

In planning a non-time-critical removal action, OSCs/RPMs should consult with the Regional risk assessors on potential action and cleanup levels. The risk evaluation at the site should remain the responsibility of EPA. Since removal and remedial action cleanup levels may differ, all early action decisions should consider the possible long-term action and corresponding cleanup levels. The OSC/RPM should ensure that all risk assessment activities are consistent with any future remedial action remaining to be taken (or potential for listing, if the site is not on the NPL) to achieve consistent risk goals. OSCs/RPMs should refer to OSWER Publication 9285.7-01B, "Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual, Part A, Interim Final" (December 1989), EPA/540/1-89/002, PB90-155581, for guidance on conducting risk evaluations.

For the EE/CA, the streamlined risk evaluation should focus on the specific problem that the removal action is intended to address. For example, if the non-time-critical removal action is to install a ground water containment system, the risk evaluation should address risk due to consumption and use of ground water. If the action is intended to address a particular source of contamination, the risk evaluation should address the risks related only to that source of contamination.

To assist in focusing the risk evaluation on specific site problems, OSCs/RPMs should rely on the conceptual site model and data developed during site characterization. A risk evaluation that identifies only contaminants of concern in the affected media, contaminant concentrations, and the toxicity associated with the chemical can be sufficient to justify taking an action. In some situations, exposure pathways can be identified as an obvious threat to human health or the environment by comparing EE/CA contaminant concentrations to standards that are potential chemical-specific applicable or relevant and appropriate requirements (ARARs) for the action. These may include non-zero Maximum Contaminant Level Goals (MCLGs) and Maximum Contaminant Levels (MCLs) for ground water or leachate, or State air quality standards for contaminants that may volatilize or be entrained by the wind. When potential ARARs for chemicals of concern do not exist for a specific contaminant, risk-based chemical concentrations should be used.

## 2.4 SITE CHARACTERIZATION (CONTINUED)

Where standards for one or more contaminants in a given medium are clearly exceeded, a removal action is generally warranted, and further quantitative assessment that considers all chemicals, their potential additive effects, or additivity of multiple exposure pathways, are generally not necessary. In cases where standards are not clearly exceeded, or where the available information is deficient or of questionable quality, a more thorough risk assessment may be advisable before deciding whether to take a removal action.

In most, if not all, PRP-and State-lead actions with no RI/FS or other site evaluation and little likelihood of future EPA remedial action, a conventional risk assessment will be necessary to evaluate all potential pathways. If more substantial information or data are needed regarding risks posed at a site (e.g., due to insufficient data quality from prior site work), OSCs/RPMs should not hesitate to request supplementary risk information before any type of response action is selected, being careful to justify any additional work that may be required. However, only in the case where the non-time-critical action will be the only Fund-lead action expected at the site should OSCs/RPMs consider performing a risk assessment that addresses all potential exposure pathways.

**For More Information:**

1. CERCLA §104(e), Information Gathering and Access
2. OSWER Publication 9200.2-16FS, "Quality Assurance for Superfund Environmental Data Collection Activities" (February 1993), PB93-963273.
3. OSWER Publication 9285.7-01B, "Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual, Part A, Interim Final" (December 1989), EPA/540/1-89/002, PB90-155581.
4. OSWER Publication 9360.4-01, "Quality Assurance/Quality Control Guidance for Removal Activities—Sampling QA/QC Plan and Data Validation Procedures (Interim Final)" (April 1990), EPA/540/G-90/004, PB90-274481.
5. OSWER Publication 9360.4-02, "Compendium of ERT Soil Sampling and Surface Geophysics Procedures" (January 1991), EPA/540/P-91/006, PB91-921273.
6. OSWER Publication 9360.4-03, "Compendium of ERT Surface Water and Sediment Sampling Procedures" (January 1991), EPA/540/P-91/005, PB91-921274.
7. OSWER Publication 9360.4-05, "Compendium of ERT Air Sampling Procedures" (May 1992), PB92-963406.
8. OSWER Publication 9360.4-06, "Compendium of ERT Ground Water Sampling Procedures" (January 1991), EPA/540/P-91/007, PB91-921275.
9. OSWER Publication 9360.4-07, "Compendium of ERT Waste Sampling Procedures" (January 1991), EPA/540/P-91/008, PB91-921276.
10. OSWER Publication 9360.4-08, "Compendium of ERT Toxicity Testing Procedures" (January 1991), EPA/540/P-91/009, PB91-921271.
11. OSWER Publication 9360.4-10, "Removal Program—Representative Soil Sampling Guidance" (November 1991), PB92-963408.

## 2.5 IDENTIFICATION OF REMOVAL ACTION SCOPE, GOALS, AND OBJECTIVES

Identifying the scope, goals, and objectives for a removal action is a critical step in the EE/CA and in the conduct of non-time-critical removal actions. At any release, regardless of whether the site is on the NPL, where the lead agency determines there is a threat to public health, welfare, or the environment, a removal action may be taken to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or threat of release.

The following example illustrates this process at an NPL site with an ongoing RI/FS, and where an opportunity exists to conduct a non-time-critical removal action. The non-time-critical removal action will minimize migration of contaminated ground water and contaminants from subsurface soil but is considered an interim action because it is expected that the remedial action will ultimately address the area of concern.

In this example, the goal of the non-time-critical removal action is to minimize migration of contaminated ground water and to begin to reduce contaminants in the soil that are the source of ground water contamination. This goal corresponds to section 300.415(b)(2)(iv) of the NCP, which identifies "high levels of hazardous substances, pollutants, or contaminants in soils largely at or near the surface, that may migrate" as a factor to be considered in determining the appropriateness of a removal action.

Five specific objectives are then developed for the site:

- Minimize migration of contaminated ground water through installation of a containment system
- Initiate removal of volatile organic compounds from contaminated soils through in-situ treatment
- Dewater areas necessary to treat effectively the decontaminated soils
- Install and operate appropriate treatment systems for ground water and vapor generated by containment, dewatering, and soil treatment that will prevent unacceptable discharges or emissions.
- Dispose of waste streams from the removal action.

These objectives should be achieved by meeting specified cleanup levels while working within the statutory limits and attaining ARARs to the extent practicable. Exhibit 7 provides a checklist of factors to consider in developing EE/CA objectives.

### Statutory Limits on Removal Actions

Because the EE/CA is a public document and readers may not be aware of the statutory limits on removal actions, the objectives section of the EE/CA should briefly explain the $2 million and 12-month statutory limits for Fund-financed removal actions pursuant to section 104(c)(1) of CERCLA. If the need for an exemption is determined early in the action, the details should be described in the EE/CA as well as in the Action Memorandum requesting the exemption.

## 2.5 IDENTIFICATION OF REMOVAL ACTION SCOPE, GOALS, AND OBJECTIVES (CONTINUED)

### Determination of Removal Scope

The EE/CA should help define the scope of the removal action. The scope of the action could be, for example, total site cleanup, site stabilization, or surface cleanup of hazardous substances. It is critical that removal actions at non-NPL sites consider the potential for future listing to ensure the goals of the removal are consistent with any potential long-term remediation. When a non-time-critical removal action will be the only or last action taken to clean up a potential NPL site, the EE/CA should provide adequate documentation that activities performed at the site are sufficient to meet completion requirements.

Specific objectives vary with the type of removal. If cleanup levels are necessary as part of a specific objective, OSCs/RPMs employ several methods to determine these levels. Examples of current practice include applying an appropriate Federal or State ARAR, consulting a Regional risk assessor, or requesting support from ATSDR or ERT.

Specific objectives that clearly define the scope of the removal action are particularly important when the site poses multiple hazards and the response actions will be conducted in phases. OSCs/RPMs should always consider how the removal action would best contribute to the efficient performance of any remedial action to be taken, as required under CERCLA section 104(a)(2). OSWER Publication 9360.0-13, "Guidance on Implementation of the 'Contribute to Remedial Performance' Provision" (April 6, 1987), provides additional guidance on implementing CERCLA section 104(a)(2). For example, if EPA or the State plans to begin a long-term remedial action at the site in 2 years, the removal action should be designed to ensure that the site is stabilized until remedial action begins. The threats that meet the NCP removal criteria should be fully addressed, if possible, given the statutory limits on removal actions.

### Determination of Removal Schedule

The general schedule for removal activities, including both the start and completion time for the non-time-critical removal action, should be part of the EE/CA. (A time-critical or emergency removal action may occur at any point from the planning phase to the completion of a non-time-critical removal action.) Although EE/CAs are only required when a planning period of at least 6 months is available, the nature of the threat may still dictate that action be initiated within 12 months or some other specific time period. The start date may also be influenced by weather, PRP negotiations, or Regional resources. For example, Regions should consult with Headquarters prior to taking any early action requiring funding beyond the Region's allowance. Also, weather can affect the schedule if the removal is to be implemented before winter. The time available before the removal action can be a significant factor in evaluating alternative technologies, since implementing technologies can necessitate considerable lead time.

The completion time should also be estimated for the removal action, considering the nature of the threat. It may be necessary to achieve beneficial results within a certain time frame to ensure adequate protection of public health and the environment. The time needed to sample treated wastes or other media prior to disposal should be factored into the schedule. Another important factor influencing the removal schedule is the statutory limit on Fund-financed removal actions. For Fund-lead sites not expected to qualify for either the emergency or consistency exemptions, the OSC/RPM should select a removal action alternative that can be implemented within the statutory limits. For Fund-lead sites expected to qualify for an exemption, the objective should be to select a

## 2.5 IDENTIFICATION OF REMOVAL ACTION SCOPE, GOALS, AND OBJECTIVES (CONTINUED)

removal action alternative that can be implemented within a reasonable time limit. Factors such as weather and the availability of Regional resources may also affect the completion time.

The flexibility in the removal schedule can vary greatly from site to site. Some sites may require a strict schedule, while others allow wider latitude in start and completion times. For a PRP-lead site the 1-year statutory restriction on removal actions is not applicable. In such cases, it may be advisable to establish a removal schedule in an administrative order. The schedule established for a site can be an important decision criterion to evaluate removal action alternatives based on their implementation times.

**For More Information:**

1. CERCLA:
   §104(a)(2), Removal Action
   §104(c)(1), Statutory Limits
2. NCP §300.415(b)(2)(i)-(viii), Appropriateness Factors
3. OSWER Publication 9360.0-13, "Guidance on Implementation of the 'Contribute to Remedial Performance' Provision" (April 6, 1987).

## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES

Based on the analysis of the nature and extent of contamination and on the cleanup objectives developed in the previous section, the OSC/RPM should identify and assess a limited number of alternatives appropriate for addressing the removal action objectives. If the information a Region typically uses to evaluate action alternatives is not sufficient, or if data quality is suspect, OSCs/RPMs should collect any additional technical information needed. If EPA is conducting oversight activities at the site, PRPs or State agencies may provide the information.

### Treatment Technologies

Whenever practicable, the alternatives selection process should consider the CERCLA preference for treatment over conventional containment or land disposal approaches to address the principal threat at a site. Although CERCLA section 121(b) appears to apply only to remedial actions, the overall strategy scheme leads to the conclusion that this preference is also an appropriate goal for removal actions. Removal actions, however, cannot conform entirely to requirements for remedial actions because of site related time constraints and statutory limits on remedial actions. To identify alternatives, the OSC/RPM can draw from EPA experience with the particular technologies and contaminants involved, as well as technical advice from ERT, Office of Research and Development's (ORD)-START, the Technology Innovation Office (TIO), the Superfund Innovative Technology Evaluation program, EPA laboratories and task forces, technology vendors, and other sources.

## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES (CONTINUED)

While treatability studies often need not be performed for proven technologies, in many cases a study is necessary to assure the attainment of treatment objectives. An EE/CA often allows time to plan and conduct a treatability study.

OSCs/RPMs should refer to OSWER Publication 9380.0-17, "Furthering the Use of Innovative Treatment Technologies in OSWER Programs" (August 1991), EPA/540/2-90/004, PB91-921366, for further guidance on assessing treatment options.

Based on the available information, only the most qualified technologies that apply to the media or source of contamination should be discussed in the EE/CA. The use of presumptive remedy guidance can in many cases provide an immediate focus to the discussion and selection of alternatives, speeding the process by limiting the universe of effective alternatives for the non-time-critical removal action. Presumptive remedies involve the use of remedial technologies that have been selected in the past at similar sites or for similar contaminants. By evaluating technologies that have been consistently selected at similar sites, a presumption can be developed that a particular remedy or set of remedies is appropriate for a specific site type. EPA is developing several presumptive remedies for a variety of response situations. Currently, information is available for wood treater sites in OSWER Publications 9355.0-46FS and 9355.0-46, "Technology Selection Guide for Wood Treater Sites" (May 1993), PB93-963505. This information was previously cited as OSWER Publications 9360.0-46FS and 9360.0-46. OSWER guidance is under development for solvent and municipal landfill sites.

A limited number of alternatives, including any identified presumptive remedies, should be selected for detailed analysis. Each of the alternatives should be described with enough detail so that the entire treatment process can be understood. For example, if one of the alternatives is incineration, information on whether the incineration will occur on-site or off-site should be provided, as well as the volume of waste to be treated, the disposition of the treatment residuals, and any ARARs that would affect significantly the action, such as the land disposal restrictions. The technical implementability of this set of potentially applicable alternatives can then be evaluated based on readily available information from the site characterization phase. Specific technologies may not be applicable to the treatment of wastes in the concentration and form found at the site, and so may be disregarded. The OSC/RPM, however, must avoid even the appearance that a technology has been pre-selected. All selected technologies should be fully considered.

### Treatment Technology Information Sources

Appendix D from OSWER Publication 9355.3-01, "Guidance for Conducting Remedial Investigations and Feasibility Studies (RI/FS) Under CERCLA" (October 1988), EPA/540/G-89/004, PB89-184626, provides a bibliography on various treatment technologies. In addition, EPA's Risk Reduction Engineering Laboratory is responsible for planning, implementing, and managing technology research, development, and demonstration programs. OSWER Publication 9380.3-03, "Inventory of Treatability Study Vendors" (March 1990), EPA/540/2-90/003a, PB91-228395, helps link the researcher and the user community.

Three additional databases can assist OSCs/RPMs in evaluating the effectiveness and availability of various treatment technologies. The Alternative Treatment Technology Information Center (ATTIC) is an on-line computer database that may be accessed with a personal computer and modem by calling 301-670-3808. ATTIC is a comprehensive, automated system that

## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES (CONTINUED)

integrates hazardous waste data into a centralized, searchable resource. Data about hazardous waste treatment technologies are found in many forms in this system, including:

- Literature search databases
- Expert lists
- Treatability databases
- Fate and transport databases
- Cost models
- Case histories
- Expert systems.

The central ATTIC database contains more than 1,400 technical documents collected in a key-word-searchable format. ORD Publication EPA/600/M-91/049, "Alternative Treatment Technology Information Center–ATTIC Brochure" (August 1991) provides additional information.

Another database operated by TIO is the Technology Vendor Information System for Innovative Treatment Technologies (VISITT). This database facilitates communication between technology vendors and government and private cleanup personnel and describes the capabilities and experience vendors have with innovative technologies. The database is useful in developing engineering studies and designs. The VISITT Hotline at 1-800-245-4505 can provide OSCs/RPMs with additional user information.

The Cleanup Information Bulletin Board (CLU-IN) provides electronic message capabilities, directories, on-line bulletins, and other cross-database files on innovative technologies. Special interest groups exist within the system specifically for OSCs/RPMs. CLU-IN can be accessed with a computer, modem line, and telecommunications software by calling 301-589-8366.

Defined alternatives are evaluated against the short- and long-term aspects of three broad criteria: effectiveness, implementability, and cost. Subcriteria to be evaluated under each of the criteria are identified in Exhibit 7 on the following page.

### Effectiveness

The effectiveness of an alternative refers to its ability to meet the objective within the scope of the removal action. This section of the EE/CA should evaluate each alternative against the scope of the removal action and against each specific objective for final disposition of the wastes and the level of cleanup desired. These objectives should be discussed in terms of protectiveness of public health and the environment.

Overall Protection of Public Health and the Environment

How well each alternative protects public health and the environment should be discussed in a consistent manner. This discussion draws on assessments conducted under other evaluation criteria, including long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

**EXHIBIT 7**
**Objectives/Criteria To Be Used in Comparative Analysis of Alternatives**

- ❑ Effectiveness
  - ❑ Protectiveness
    - ❑ Protective of public health and community
    - ❑ Protective of workers during implementation
    - ❑ Protective of the environment
    - ❑ Complies with ARARs
  - ❑ Ability to Achieve Removal Objectives
    - ❑ Level of treatment/containment expected
    - ❑ No residual effect concerns
    - ❑ Will maintain control until long-term solution implemented
- ❑ Implementability
  - ❑ Technical Feasibility
    - ❑ Construction and operational considerations
    - ❑ Demonstrated performance/useful life
    - ❑ Adaptable to environmental conditions
    - ❑ Contributes to remedial performance
    - ❑ Can be implemented in 1 year
  - ❑ Availability
    - ❑ Equipment
    - ❑ Personnel and services
    - ❑ Outside laboratory testing capacity
    - ❑ Off-site treatment and disposal capacity
    - ❑ PRSC
  - ❑ Administrative Feasibility
    - ❑ Permits required
    - ❑ Easements or right-of-ways required
    - ❑ Impact on adjoining property
    - ❑ Ability to impose institutional controls
    - ❑ Likelihood impose obtaining exemption from statutory limits (if needed)
- ❑ Cost
  - ❑ Capital cost
  - ❑ PRSC cost
  - ❑ Present worth cost

## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES (CONTINUED)

The discussion should focus on how each alternative achieves adequate protection and describe how the alternative will reduce, control, or eliminate risks at the site through the use of treatment, engineering, or institutional controls. This evaluation should identify any unacceptable short-term impacts.

Compliance with ARARs and Other Criteria, Advisories, and Guidance

Section 300.415(i) of the NCP requires that Fund-financed removal actions under CERCLA section 104 and removal actions pursuant to CERCLA section 106 attain ARARs under Federal or State environmental laws or facility siting laws, to the extent practicable considering the urgency of the situation and the scope of the removal. At certain sites, ARARs may form the basis of the removal action objectives.

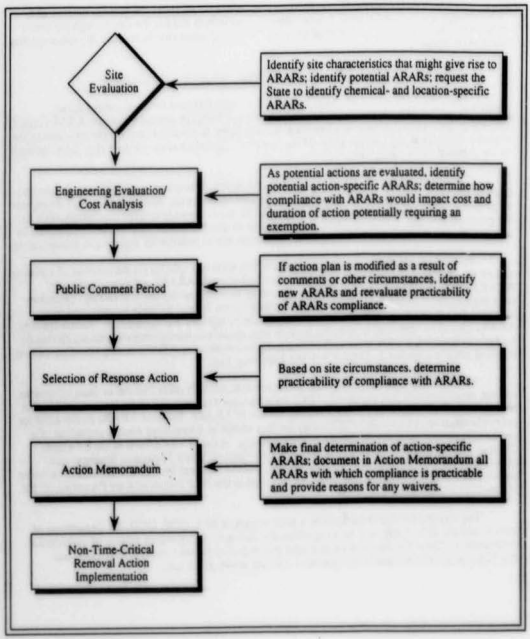
The detailed analysis should summarize which requirements are applicable or relevant and appropriate to an alternative and describe how the alternative meets those requirements. To ensure a full consideration of potential ARARs, OSCs/RPMs may choose to employ a summary table to list potential ARARs. OSCs/RPMs will then be able to quickly identify particular requirements in order to plan for compliance or eliminate requirements not of concern for a given site or alternative.

Since the evaluation of a site will produce data relatively quickly on the location of a release and on the chemical constituents of concern, chemical-specific ARARs and location-specific ARARs should be identified as promptly as possible upon request by the OSC/RPM. Therefore, only State standards that are promulgated, identified by the State in a timely manner, and more stringent than Federal requirements may be applicable or relevant and appropriate. Action-specific ARARs should be identified later in the process after qualified cleanup technologies are chosen for analysis in the EE/CA. The process for identifying and evaluating ARARs during non-time-critical removal actions is shown in Exhibit 8 on the following page.

In addition to ARARs, EPA may, as appropriate, identify other Federal or State advisories, criteria, or guidance to be considered (TBC) for a particular release. TBCs are not required by the NCP; rather, TBCs are meant to complement the use of ARARs. Because ARARs do not exist for every chemical or circumstance, TBCs may be very useful in determining what is protective of a site or how to carry out certain actions or requirements. A list of TBCs, such as the EPA Spill Cleanup Policy, Health Effects Assessments, EPA's Ground Water Protection Strategy, and advisories issued by the Fish and Wildlife Service and the National Marine Fisheries Service under the Fish and Wildlife Coordination Act, can be found in the NCP Proposed Rule Preamble, 53 FR 51449-51450 (December 21, 1988).

The EnviroText Retrieval System, a joint project of EPA, DOE, DOD, the Department of Justice, and the U.S. Army, will be a user-friendly, full-text library search system of multimedia environmental laws. On-line service as a pilot program is expected to start in Fall 1993, and should assist greatly in considering potential ARARs at any given site.

**EXHIBIT 8**
**Identification and Evaluation of ARARs During Non-Time-Critical Removal Actions**



## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES (CONTINUED)

Long-Term Effectiveness and Permanence

This evaluation assesses the extent and effectiveness of the controls that may be required to manage the risk posed by treatment residuals and/or untreated wastes at the site. The following components should be considered for each alternative:

- Magnitude of Risk. This criterion looks at the effectiveness of the alternative and assesses the risk from waste and residuals remaining at the conclusion of site activities. This component also evaluates whether the alternative contributes to future remedial objectives. If the non-time-critical removal action is an interim step and is expected to be followed by remedial action, this factor could be reduced in scope or deleted, if appropriate. If the non-time-critical action is the last action anticipated for a site or release, then the magnitude of risk should be fully evaluated for the action.

- Adequacy and Reliability of Controls. A completed removal action may require PRSC, those response activities necessary to sustain the integrity of a Fund-financed removal action following its conclusion (see Chapter 1). After the removal is completed, PRSC costs may be paid by the PRP, State or local government, or the remedial program.

Reduction of Toxicity, Mobility, or Volume Through Treatment

EPA's policy of preference for treatment (i.e., for technologies that will permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances as their principal element) requires evaluation based upon the following subfactors for a particular alternative:

- The treatment process(es) employed and the material(s) it will treat
- The amount of the hazardous materials to be destroyed or treated
- The degree of reduction expected in toxicity, mobility, or volume
- The degree to which the treatment will be irreversible
- The type and quantity of residuals that will remain after treatment
- Whether the alternative will satisfy the preference for treatment.

The ability of the treatment technology to reduce the principal threats posed by the release, including the extent to which the toxicity, mobility, or volume of the contaminants are reduced (either alone or in combination) may be subject to time and applicability restraints, and may be beyond the scope of an interim removal action when remedial action is indicated.

Short-Term Effectiveness

The short-term effectiveness criterion addresses the effects of the alternative during implementation before the removal objectives have been met. Alternatives should also be evaluated with respect to their effects on human health and the environment following implementation. The following factors should be addressed as appropriate for each alternative:

- Protection of the Community. This factor addresses any risk to the affected community that results from implementation of the proposed action, whether from

air quality impacts, fugitive dusts, transportation of hazardous materials, or other sources.

- Protection of the Workers. This factor assesses any threats to site workers and the effectiveness and reliability of protective measures that would be taken.
- Environmental Impacts. This factor evaluates the potential adverse environmental impacts from the implementation of each alternative. The factor also assesses the reliability of mitigation measures in preventing or reducing the potential impacts.
- Time Until Response Objectives Are Achieved. This factor estimates the time needed to achieve protection for the site itself or for individual elements or threats associated with the site.

### Implementability

The implementability criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. The following factors should be considered under this criterion.

Technical Feasibility

The EE/CA must assess the ability of the technology to implement the remedy. Technical difficulties were initially identified during development of alternatives and should be addressed again in detail for the alternative as a whole. Each alternative should be evaluated for implementation factors such as assembling, staffing, and operating the alternative within the time frames in the removal schedule.

The reliability of the technology is also of concern, as technical problems associated with implementation may delay the schedule. Each alternative should be evaluated for technology maturity, prior use under similar conditions for similar wastes, and possible difficulty in operation once it is constructed. Operational difficulties could include the frequency or complexity of equipment maintenance or controls, the need for raw materials, or the need for a large technical staff. Potential impacts on the local community during construction operations should also be evaluated.

The EE/CA should consider environmental conditions not only with respect to the operation phase of the alternative, but also to the set-up and construction phase. Certain technologies may be difficult to construct or operate in remote locations. Climate or terrain may severely impact or eliminate specific alternatives from consideration. For example, an alternative that uses an oil/water separator or sedimentation tank may be unusable at freezing temperatures. Temperature and time of year may directly impact a technology's ability to reach a specific site. For example, a rainy season may make roads to the site inaccessible. Not only will local terrain affect the ability to locate an alternative, but it may also affect performance. For example, a site located in a valley may be susceptible to inversions or limited air currents, therefore making incineration unacceptable.

Potential future remedial actions should also be discussed. Remedial action or a non-time-critical removal action that completely cleans up an NPL site may trigger the five-year review

## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES (CONTINUED)

requirements of CERCLA section 121(c). This evaluation should also consider the operation of PRSC measures or operation and maintenance (O & M). This discussion should depict how difficult it would be for EPA to implement these future remedial actions. This is particularly applicable to an interim action where additional action is expected.

If the site will be receiving long-term remedial treatment, the EE/CA must determine if each alternative contributes to the efficient performance of any anticipated remedial activities. CERCLA section 104(a)(2) states that a removal action should, to the extent practicable, contribute to the efficient performance of any long-term remedial action with respect to the release or threatened release concerned. Removal actions that do contribute may be eligible for an exemption from the $2 million/12-month statutory limit on removal actions. OSWER Publication 9360.0-12A, "Final Guidance on Implementation of the 'Consistency' Exemption to the Statutory Limits on Removal Actions" (June 12, 1989), PB90-274465/CCE, states that removal actions should be designed to avoid wasteful, repetitive, short-term actions that do not contribute to the efficient, cost-effective performance of a long-term remedial action.

In some cases, it may not be easy to demonstrate removal action consistency with future remedial action. Remedial actions often cannot be anticipated when an EE/CA is being developed for a non-time-critical removal action. It may be difficult to show with reasonable certainty that a removal option would be consistent with a future remedial action. Section 104(a)(2) of CERCLA provides for discretion in using the practicability standard. Accordingly, OSCs/RPMs should avail themselves of this discretion when developing and evaluating removal action alternatives that would provide for partial cleanups of sites.

The ability to monitor the effectiveness of the alternative may also be considered in the EE/CA. These monitoring considerations would generally not be evaluated for Fund-lead non-time-critical removal actions where remedial work was planned.

Administrative Feasibility

The administrative feasibility factor evaluates those activities needed to coordinate with other offices and agencies. The administrative feasibility of each alternative should be evaluated, including the need for off-site permits, adherence to applicable nonenvironmental laws, and concerns of other regulatory agencies. Factors that should be considered include, but are not limited to, the following:

- Statutory Limits. Each alternative should be evaluated for its compliance with the statutory limits on removal actions. If an alternative requires a statutory exemption from the $2 million or 12-month limit, the EE/CA should evaluate whether the site qualifies. If the time or money needed to implement the alternative will exceed the statutory limit for removal actions, an exemption request, which is part of the Action Memorandum, should be submitted to Headquarters for review as soon as possible. Headquarters approval is only required for non-NPL consistency waivers and for emergency waivers (money, not time).

- Permits and Waivers. The EE/CA should evaluate whether each alternative will require off-site permits (e.g., building permits). Other factors that may affect the administrative feasibility include the need for easements, right-of-way agreements, or zoning variances.

## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES (CONTINUED)

Availability of Services and Materials

The EE/CA must determine if off-site treatment, storage, and disposal capacity, equipment, personnel, services and materials, and other resources necessary to implement an alternative will be available in time to maintain the removal schedule. Availability of funds to meet PRSC requirements is also a factor. Several important availability factors are:

- Personnel and Technology. Using the removal action schedule as a guide, the EE/CA should determine whether a specific alternative will be available from the manufacturer. Other technologies may require a large number of skilled laborers or specialists (e.g., welders, pipe fitters, chemical engineers) that may not be readily available if the site is remote, thus impacting the ability to assemble the removal action alternative.

- Off-Site Treatment, Storage, and Disposal. If off-site removal and treatment of the waste is being considered, the EE/CA should address the adequacy of off-site capacity. If the site is in a remote location, this type of service may not be available or may be extremely costly because of transportation expenses. OSCs/RPMs should review OSWER Publication 9834.11, "Revised Procedures for Implementing Off-Site Response Actions" (November 13, 1987), PB91-139282/CCE, before evaluating this option. The OSC/RPM and Regional off-site contact should discuss whether there are treatment facilities in compliance with the off-site policy that can accept the type of CERCLA waste at the site. [A final rule addressing this issue is expected in 1993.]

- Services and Materials. This factor involves considering such services as laboratory testing capacity and turnaround for chemical analyses, adequate supplies and equipment for on-site activities, or installation of extra utilities (e.g., power lines, sewer connections).

- Prospective Technologies. This factor assesses whether specific technologies are generally available for the site. Promising technologies sometimes require further development before they can be applied at full-scale. The EE/CA should indicate when a technology would be available for full-scale use. Also, if time allows, the OSC/RPM may be able to develop specifications to allow competitive bidding for a treatment contract. This would be of particular use in developing innovative technologies.

State (Support Agency) Acceptance

The State (or support agency in the case of State-lead sites) may have technical and administrative concerns. Since States may review the alternatives, their concerns should be considered in determining the recommended alternative in the EE/CA and in the final selection of the alternative in the Action Memorandum.

## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES (CONTINUED)

Community Acceptance

As with State acceptance, community acceptance of an alternative will be considered when making a recommendation in the EE/CA and in the final selection of the alternative in the Action Memorandum.

### Cost

Each removal action alternative should be evaluated to determine its projected costs. The evaluation should compare each alternative's capital and PRSC costs. The present worth of alternatives that will last longer than 12 months should be calculated. In certain cases, OSCs/RPMs may conduct a sensitivity analysis of the present worth calculations.

To compare the cost of each alternative, the direct and indirect capital costs and the PRSC costs of each alternative should be projected. OSWER Publication 9360.0-02C, "Removal Cost Management System: Version 3.2" (May 1990), EPA/540/P-90/003, PB90-272691, provides guidance on performing cost projections and daily cost tracking. The following items are considered capital costs and PRSC costs:

- Direct capital costs
  - Construction costs
  - Equipment and material costs
  - Land and site acquisition costs
  - Buildings and services costs
  - Relocation expenses
  - Transport and disposal costs
  - Analytical costs
  - Contingency allowances
  - Treatment and operating costs
- Indirect capital costs
  - Engineering and design expenses
  - Legal fees and license or permit costs
  - Start-up and shakedown costs
- Annual PRSC costs
  - Operational costs
  - Maintenance costs
  - Auxiliary materials and energy
  - Disposal of residuals
  - Monitoring costs
  - Support costs.

Many sources of cost information exist, including the ERCS contract price list, vendor estimates, and estimates for similar projects. For items not currently on the ERCS list and for projects where outside bids are being considered, cost estimates more than 12 months old should be updated using an appropriate economic index, such as the Engineering News Record Construction Cost Index for construction costs, the Marshall and Stevens Index for treatment facility costs, the American City and County Municipal Cost Index for manpower costs, and the

## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES (CONTINUED)

Producer Price Index for Finished Goods, published by the U.S. Department of Labor in the Monthly Labor Review. All these information sources can be found in Regional and/or public libraries.

After identifying and estimating the costs, OSCs/RPMs should calculate the present worth for removal action alternatives that will last longer than 12 months. Present worth analysis evaluates expenditures that occur over different time periods by discounting all future costs, usually PRSC costs, to a common base year, usually the present year. Present worth analysis produces a single figure representing the amount of money that, if invested in the base year and dispersed as needed, would cover all costs associated with the alternative. This analysis is particularly important when comparing technologies with different operating lifetimes. The final present worth figure and the assumptions used in calculating that figure should be included in the EE/CA. The detailed computations should be attached as an appendix to the EE/CA.

For alternatives that include only PRSC after 1 year from the start of the removal action, the total cost of the option over the full life of the project should be calculated. In comparing alternatives, however, OSCs/RPMs should use the cost of the option to EPA for 1 year, provided that all PRSC costs will be assumed by another party after 1 year. OSWER Publication 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit Cost Analysis" (June 25, 1993) provides information on discount rates for present worth calculations.

In addition, OSCs/RPMs should determine whether a sensitivity analysis is warranted. A sensitivity analysis assesses the effect that variations in specific assumptions associated with design, implementation, operation, discount rate, and effective life of an alternative can have on the present worth. The sensitivity of such costs to uncertainties can be observed by varying the cost assumptions and noting their effect on the present worth. A sensitivity analysis might be appropriate when uncertainties exist about the amount of waste present, how quickly a technology can perform, or the future price of cleanup services.

**For More Information:**

1. CERCLA:
   §104(a), Removal Action
   §121, Cleanup Standards
   §311(b), Alternative or Innovative Treatment Technology Research and Demonstration Programs
2. NCP §300.415(i), ARARs Attainment
3. Office of Policy Analysis (OPA) Publication, "Guidelines for Performing Regulatory Impact Analysis" (December 1983).
4. ORD Publication EPA/600/M-91/049, "Alternative Treatment Technology Information Center–ATTIC Brochure" (August 1991).
5. OSWER Publication 9234.1-01, "CERCLA Compliance with Other Laws Manual, Part 1 (Interim Final)" (August 1988), EPA/540/G-89/006, PB90-272535.
6. OSWER Publication 9234.1-02, "CERCLA Compliance with Other Laws Manual, Part 2: Clean Air Act and Other Environmental Statutes and State Requirements" (August 1989), EPA/540/G-89/009, PB90-148461.

## 2.6 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES (CONTINUED)

7. OSWER Publications 9355.0-46FS and 9355.0-46, "Technology Selection Guide for Wood Treater Sites" (May 1993), PB93-963505, also previously cited as OSWER Publication 9360.0-46FS and 9360.0-46.
8. OSWER Publication 9355.3-01, "Guidance For Conducting Remedial Investigations and Feasibility Studies (RI/FS) Under CERCLA" (October 1988), EPA/540/G-89/004, PB89-184626.
9. OSWER Publication 9355.3-20, "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit Cost Analysis" (June 25, 1993), PB93-963297.
10. OSWER Publication 9360.3-02, "Superfund Removal Procedures—Guidance on the Consideration of ARARs During Removal Actions" (August 1991), PB92-963401/CCE.
11. OSWER Publication 9360.0-02C, "Removal Cost Management System: Version 3.2" (May 1990), EPA/540/P-90/003, PB90-272691.
12. OSWER Publication 9360.0-12A, "Final Guidance on Implementation of the 'Consistency' Exemption to the Statutory Limits on Removal Actions" (June 12, 1989), PB90-274465/CCE.
13. OSWER Publication 9380.0-17, "Furthering the Use of Innovative Treatment Technologies in OSWER Programs" (August 1991), EPA/540/2-90/004, PB91-921366.
14. OSWER Publication 9380.3-03, "Inventory of Treatability Study Vendors" (March 1990), EPA/540/2-90/003a, PB91-228395.
15. OSWER Publication 9834.11, "Revised Procedures for Implementing Off-site Response Actions" (November 13, 1987), PB91-13928?/CCE.*
16. OSWER Publication 9834.11a, "Off-Site Policy RFA or Equivalent Investigation Requirement at RCRA Treatment and Storage Facilities" (January 4, 1988), PB91-139295/CCE.*

* *A final rule addressing this issue is expected in 1993.*

## 2.7 COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES

Once the alternatives have been described and individually assessed against the criteria, a comparative analysis should be conducted to evaluate the relative performance of each alternative in relation to each of the criteria. This is in contrast to the preceding analysis in which each alternative was analyzed independently without consideration of other alternatives. The purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another so that key tradeoffs that would affect the remedy selection can be identified.

## 2.8 RECOMMENDED REMOVAL ACTION ALTERNATIVE

The EE/CA should identify the action that best satisfies the evaluation criteria based on the comparative analysis in the previous section. This description should briefly describe the evaluation process used to develop the recommended action. For both Fund-lead and PRP-lead EE/CAs, EPA should determine the recommended action. This determination may be placed in the administrative record file concurrently with the EE/CA. This section of the EE/CA may enhance public involvement efforts by describing clearly why the alternative was recommended. Because the EE/CA is open to public comment and evaluation and because EPA is required to prepare

## 2.8 RECOMMENDED REMOVAL ACTION ALTERNATIVE (CONTINUED)

a written response to significant comments, the recommended alternative may not always be the final alternative selected in the Action Memorandum. The Action Memorandum and the administrative record should provide enough detail to justify the final alternative selected.

## Appendix A

## References


OPA Publication, "Guidelines for Performing Regulatory Impact Analysis" (December 1983).

ORD Publication EPA/600/M-91/049, "Alternative Treatment Technology Information Center–ATTIC Brochure" (August 1991).

OSWER Publication 9200.2-02, "Accelerated Response at NPL Sites Guidance" (December 15, 1988), PB90-258302/CCE.

OSWER Publication 9200.2-16FS, "Quality Assurance for Superfund Environmental Data Collection Activities" (February 1993), PB93-963273.

OSWER Publication 9200.3-01H-1, "Superfund Program Implementation Manual Fiscal Year 1993" (June 1993), PB92-963276.

OSWER Publication 9200.5-402A, "Contracting and Subcontracting Guide to the Superfund Program" (May 1992), EPA/540/G-91/012, PR-923.

OSWER Publication 9203.1-02I, "Superfund Accelerated Cleanup Bulletin: Presumptive Remedies for Municipal Landfill Sites, Volume 1, Number 1" (April 1992), PB92-963367.

OSWER Publication 9203.1-03, "Guidance on Implementation of the Superfund Accelerated Cleanup Model (SACM) under CERCLA and the NCP" (July 7, 1992), PB93-963252.

OSWER Publication 9203.1-03A, "Exercising Flexibility Through the Superfund Accelerated Cleanup Model (SACM)" (October 26, 1992), PB93-963253.

OSWER Publication 9203.1-05I, Volume 1, Numbers 1-5 (December 1992)

- Volume 1, Number 1, "Status of Key SACM Program Management Issues—Interim Guidance" PB93-963262.
- Volume 1, Number 2, "Early Action and Long-Term Action Under SACM—Interim Guidance" PB93-963263.
- Volume 1, Number 3, "Enforcement Under SACM—Interim Guidance" PB93-963264.
- Volume 1, Number 4, "Assessing Sites Under SACM—Interim Guidance" PB93-963265.
- Volume 1, Number 5, "SACM Regional Decision Teams—Interim Guidance" PB93-963266.

OSWER Publication 9230.0-03C "Community Relations in Superfund: A Handbook" (January 1992), EPA/540/R-92/009, PB92-963341.

OSWER Publication 9234.1-01, "CERCLA Compliance with Other Laws Manual, Part I (Interim Final)" (August 1988), EPA/540/G-89/006, PB90-272535.

OSWER Publication 9234.1-02, "CERCLA Compliance with Other Laws Manual, Part 2: Clean Air Act and Other Environmental Statutes and State Requirements" (August 1989), EPA/540/G-89/009, PB90-148461.

## References (Continued)


OSWER Publication 9240.0-01D, "User's Guide to the Contract Laboratory Program" (January 1991), EPA/540/P-91/002, PB91-921278.

OSWER Publication 9242.2-01B, "Emergency Response Cleanup Services (ERCS) Contracts: User's Manual" (October 1987), PB90-191966/CCE.

OSWER Publication 9242.2-02, "Site-Specific Contracting for Removals" (April 10, 1989), PB91-215053/CCE.

OSWER Publication 9242.6-01, "ARCS Work Assignment Management, Field Guide" (January 1989), PB91-214965/CCE.

OSWER Publication 9242.6-07, "Approval of Long-Term Contracting Strategy for Superfund (Superfund Management Review: Recommendations E.2)" (August 1990), PB90-273822/CCE.

OSWER Publication 9285.1-03, "Standard Operating Safety Guides" (June 1992), PB92-963414.

OSWER Publication 9285.7-01B, "Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual, Part A, Interim Final" (December 1989), EPA/540/1-89/002, PB90-155581.

OSWER Publication 9285.8-02 "Health and Safety Audit Guidelines: SARA Title I, Section 126" (December 1989), EPA/540/G-89/010, PB90-204157.

OSWER Publications 9355.0-46FS and 9355.0-46, "Technology Selection Guide for Wood Treater Sites" (May 1993), PB93-963505, also previously cited as OSWER Publications 9360.0-46FS and 9360.0-46.

OSWER Publication 9355.3-01, "Guidance For Conducting Remedial Investigations and Feasibility Studies (RI/FS) Under CERCLA" (October 1988), EPA/540/G-89/004, PB89-184626.

OSWER Publication 9355.3-20, "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit Cost Analysis" (June 25, 1993), PB93-963297.

OSWER Publication 9360.0-02C, "Removal Cost Management System: Version 3.2" (May 1990), EPA/540/P-90/003, PB90-272691.

OSWER Publication 9360.0-12A, "Final Guidance on Implementation of the 'Consistency' Exemption to the Statutory Limits on Removal Actions" (June 12, 1989), PB90-274465/CCE.

OSWER Publication 9360.0-12FS, "Exemptions from the Statutory Limits on Removal Actions" (November 1990), PB91-921304/CCE.

OSWER Publication 9360.0-13, "Guidance on Implementation of the 'Contribute to Remedial Performance' Provision" (April 6, 1987).

## References (Continued)


OSWER Publication 9360.0-15, "The Role of Expedited Response Actions Under SARA" (April 21, 1987), PB91-214221/CCE.

OSWER Publication 9360.0-18, "Removal Program Priorities" (March 31, 1988), PB91-205484/CCE.

OSWER Publication 9360.2-02, "Policy on Management of Post-Removal Site Control" (December 3, 1990), PB91-921326/CCE.

OSWER Publication 9360.2-04, "Authorization for Regional Administrators to Approve Consistency Exemption at NPL Sites" (February 24, 1992), PB92-963343.

OSWER Publication 9360.3-01, "Superfund Removal Procedures—Action Memorandum Guidance" (December 1990), EPA/540/P-90/004, PB90-274473.

OSWER Publication 9360.3-02, "Superfund Removal Procedures—Guidance on the Consideration of ARARs During Removal Actions" (August 1991), PB92-963401/CCE.

OSWER Publication 9360.3-05, "Superfund Removal Procedures—Public Participation Guidance for On-Scene Coordinators: Community Relations and the Administrative Record" (June 1992), PB92-963416.

OSWER Publication 9360.3-06, "Superfund Removal Procedures—Removal Enforcement Guidance for On-Scene Coordinators" (April 1992), PB92-963409.

OSWER Publication 9360.4-01, "Quality Assurance/Quality Control Guidance for Removal Activities—Sampling QA/QC Plan and Data Validation Procedures (Interim Final)" (April 1990), EPA/540/G-90/004, PB90-274481.

OSWER Publication 9360.4-02, "Compendium of ERT Soil Sampling and Surface Geophysics Procedures" (January 1991), EPA/540/P-91/006, PB91-921273.

OSWER Publication 9360.4-03, "Compendium of ERT Surface Water and Sediment Sampling Procedures" (January 1991), EPA/540/P-91/005, PB91-921274.

OSWER Publication 9360.4-05, "Compendium of ERT Air Sampling Procedures" (May 1992), PB92-963406.

OSWER Publication 9360.4-06, "Compendium of ERT Ground Water Sampling Procedures" (January 1991), EPA/540/P-91/007, PB91-921273.

OSWER Publication 9360.4-07, "Compendium of ERT Waste Sampling Procedures" (January 1991), EPA/540/P-91/008, PB91-921276.

OSWER Publication 9360.4-08, "Compendium of ERT Toxicity Testing Procedures" (January 1991), EPA/540/P-91/009, PB91-921271.

OSWER Publication 9360.4-10, "Removal Program—Representative Soil Sampling Guidance" (November 1991), PB92-963408.

## References (Continued)


OSWER Publication 9360.6-08, "Technical Assistance Team (TAT) Contracts Users' Manual" (October 1991), PB92-963407.

OSWER Publication 9380.0-17, "Furthering the Use of Innovative Treatment Technologies in OSWER Programs" (August 1991), EPA/540/2-90/004, PB91-921366

OSWER Publication 9380.3-03, "Inventory of Treatability Study Vendors" (March 1990), EPA/540/2-90/003a, PB91-228395.

OSWER Publication 9832.0-1A, "Procedures for Documenting Costs for CERCLA Section 107 Actions" (January 30, 1985), PB91-138958/CCE.

OSWER Publication 9832.1, "Cost Recovery Actions Under CERCLA" (August 26, 1983), PB91-138966/CCE.

OSWER Publication 9832.11, "Guidance on Documenting Decisions Not to Task Cost Recovery Actions" (June 7, 1988) PB91-139048/CCE.

OSWER Publication 9832.13, "Superfund Cost Recovery Strategy" (July 29, 1988), PB91-139063/CCE.

OSWER Publication 9833.0-1A, "Guidance on CERCLA Section 106(a) Unilateral Administrative Orders for Remedial Designs and Remedial Actions" (March 13, 1990), PB91-139089/CCE.

OSWER Publication 9833.3A-1, "Final Guidance on Administrative Records for Selection of CERCLA Response Actions" (December 3, 1990), PB91-139121/CCE.

OSWER Publication 9834.10, "Interim Guidance on Notice Letters, Negotiations, and Information Exchange" (October 19, 1987), PB91-139253/CCE.

OSWER Publication 9834.10-1b, "Model Notice Letters" (February 7, 1989), PB91-139279/CCE.

OSWER Publication 9834.11, "Revised Procedures for Implementing Off-Site Response Actions" (November 13, 1987), PB91-139287/CCE. (A final rule addressing this issue is expected in 1993.)

OSWER Publication 9834.11a, "Off-Site Policy RFA or Equivalent Investigation Requirement at RCRA Treatment and Storage Facilities" (January 4, 1988), PB91-139295/CCE. (A final rule addressing this issue is expected in 1993.)

OSWER Publication 9836.0-1A, "Community Relations During Enforcement Activities and Development of the Administrative Record" (November 3, 1988), PB91-139519/CCE.

OSWER Publication 9837.2B, "Enforcement Project Management Handbook: FY1993 Update" (May 1993), PB93-963602.

## References (Continued)

### Statutes and Regulations


Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, 42 U.S.C. §§9601-9675 (1992)

Cooperative Agreements and Superfund State Contracts for Superfund Response Actions, 55 FR 23007 (June 5, 1990) (codified at 40 CFR Part 35, Subpart O)

Hazardous Waste Operations and Emergency Response Regulations, 51 FR 45663 (December 19, 1986), 52 FR 16241 (May 4, 1987), 53 FR 12121 (April 12, 1988), 54 FR 9317 (March 6, 1989), 55 FR 25094 (June 20, 1990), 55 FR 32015 (August 6, 1990), 55 FR 46054 (November 1, 1990), 57 FR 6403 (February 24, 1992), (codified at 29 CFR §1910.120)

Worker Protection, 54 FR 26654 (June 23, 1989), 57 FR 28087, 28088 (June 24, 1992) (codified at 40 CFR Part 311)

National Oil and Hazardous Substances Pollution Contingency Plan, 55 FR 8666 (March 8, 1990) (codified at 40 CFR §§300.1-300.920)

## Appendix B

## Key Words Index

## Key Words Index (Continued)

## Comparison of EE/CA to RI/FS

### EE/CA Process

1. **EE/CA Approval Memorandum**
   - Secure management approval and funding for EE/CA
   - Include finding of actual or threatened release and, if present, an imminent and substantial endangerment and general site information and costs
   - Document that situation meets NCP criteria and action is non-time-critical

EE/CA

2. **EE/CA Executive Summary**
   - Identifies threat
   - Describes removal action objectives
   - Summarizes recommended action

3. **Site Characterization**
   - Collect site description and background
   - Identify previous removal actions
   - Determine source, nature, and extent of contamination
   - Collect analytical data
   - Perform streamlined risk evaluation
   - Identify contaminant- and location-specific ARARs

4. **Identification of Removal Action Objectives**
   - Evaluate statutory limits
   - Determine scope of removal action
   - Determine schedule of removal action

### RI/FS Process*

1a. **Pre-RI/FS Scoping**
   - Collect existing data
   - Visit site/identify areas of concern
   - Generate statement of work

1b. **RI/FS Scoping**
   - Collect/analyze existing data
   - Determine need for/implement additional studies
   - Develop preliminary remedial action alternatives/objectives
   - Evaluate need for treatability studies
   - Begin preliminary identification of ARARs
   - Identify data needs/data quality objectives
   - Design data collection program
   - Develop work plan
   - Identify health and safety protocols

REMEDIAL INVESTIGATION

2. **Site Characterization**
   - Investigate site physical characteristics
   - Define sources of contamination
   - Determine nature and extent of contamination
   - Conduct laboratory analyses
   - Conduct data analyses
   - Conduct baseline risk assessment
   - Identify contaminant- and location-specific ARARs
   - Define remedial action goals
   - Draft RI Report

---

* OSWER Publication 9355.3-01, "Guidance for Conducting Remedial Investigations and Feasibility Studies (RI/FS) Under CERCLA" (October 1988), EPA/540/G-89/004, PB89-184626

## Appendix C

## Comparison of EE/CA to RI/FS (Continued)

| EE/CA Process | RI/FS Process* |
|---|---|
| | **FEASIBILITY STUDY** |
| **5. Identification and Analysis of Removal Action Alternatives** | **3a. Development of Alternatives** |
| • Identify treatment technologies (presumptive remedy and treatability studies, as appropriate) | • Remedial action objectives<br>• General response actions |
| • Evaluate effectiveness | • Volumes or areas of media |
| – Overall protection of human health and the environment | • Screen technology and process options |
| – Compliance with ARARs | • Process options identification |
| – Long-term effectiveness and permanence | • Technology alternatives |
| – Reduction of toxicity, mobility, or volume through treatment | • Action-specific ARARs |
| – Short-term effectiveness | **3b. Screening of Alternatives** |
| • Evaluate implementability | • Effectiveness |
| – Technical feasibility | • Implementability |
| – Administrative feasibility | • Cost |
| – Availability of services and materials | • Innovative technologies |
| – State acceptance | **3c. Performance of Treatability Studies** |
| – Community acceptance | • Data requirements |
| • Evaluate cost | • Bench- or pilot-scale study |
| | • Treatability test work plan |
| | • Documentation of results |
| | **4. Detailed Analysis of Alternatives** |
| | • Overall protection of human health and environment |
| | • Compliance w/ARARs |
| | • Long-term effectiveness and performance |
| | • Reduction of toxicity, mobility, or volume through treatment |
| | • Short-term effectiveness |
| | • Implementability |
| | • Cost |
| | • State acceptance |
| | • Community acceptance |
| | (analyze alternatives against these nine criteria) |
| **6. Comparative Analysis of Removal Action Alternatives** | **5. Comparative Analysis** |
| (See criteria above) | (See criteria above) |
| Compare alternatives | Compare alternatives |
| **7. Recommended Removal Action Alternative (summarized in Action Memorandum)** | **6. Preferred Remedial Alternative (summarized in Proposed Plan)** |
| [Public comment period on EE/CA of at least 30 days] | [Public comment period of at least 30 days] |

* OSWER Publication 9355.3-01, "Guidance for Conducting Remedial Investigations and Feasibility Studies (RI/FS) Under CERCLA" (October 1988), EPA/540/G-89/004, PB89-184626

## Appendix D

### Model Notice of Decision Not To Use Special Notice Procedures*

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region []

[ADDRESS]

**NOTICE OF DECISION NOT TO USE SPECIAL NOTICE PROCEDURES**
**URGENT LEGAL MATTER****
**CERTIFIED MAIL: RETURN RECEIPT REQUESTED**

[Date]

[Name and Address of Potentially Responsible Party]
[c/o Registered Agent or Contact Person]

Re: [Name of Site]
[Address or location of Site] (the "Site")

Dear [Name of PRP if an individual; "sir or madam" otherwise]:

This letter notifies you that the United States Environmental Protection Agency (EPA) has determined not to use special notice procedures pursuant to Section 122(e) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA), at the above-referenced site regarding the [RI/FS] [RI/FS for operable unit] [RD/RA] [RD/RA for operable unit].

**NOTICE OF POTENTIAL LIABILITY**

As indicated in the general notice letter previously sent to you, EPA has evaluated information in connection with the investigation of the site. EPA has information indicating that you may be a potentially responsible party (PRP) as defined at Section 107(a) of the CERCLA, 42 U.S.C. 9607(a), with respect to hazardous substances at this site. Potentially responsible parties under CERCLA include current and former owners and operators of the site as well as persons who arranged for disposal or treatment of hazardous substances sent to the site, or persons who accepted hazardous substances for transport to the site.

**DECISION NOT TO USE SPECIAL NOTICE**

In this instance EPA has decided that it is inappropriate to invoke the Section 122(e) special notice procedures. EPA believes that using such special notice procedures would not facilitate an agreement between EPA and the PRPs and would not expedite the response action at the site. (Provide specific reasons why the special notice procedures would not facilitate an agreement and

---

* Model letter from OSWER Publication 9834.10-1b, "Model Notice Letters" (Feb. 7, 1989), PB91-139279/CCE.

** This letter may need to be modified if a general notice letter has not been sent to include some of the information typically conveyed in that letter.

would not expedite a response. Examples may include where past dealings with the PRPs strongly indicate they are unlikely to negotiate a settlement, where EPA believes the PRPs have not been negotiating informally to this point in good faith, or where PRPs lack the resources to conduct response activities.)

The decision not to use the special notice procedure does not preclude you from entering into discussions with EPA regarding your participation in response activities at the site. The decision simply means that EPA will not use the special notice procedures to govern any future discussions. EPA encourages all PRP offers regarding settlement of this matter and cleanup of this site.

## ADMINISTRATIVE RECORD

Pursuant to CERCLA Section 113(k), EPA must establish an administrative record that contains documents that form the basis of EPA's decision on the selection of a response action for a site. The administrative record files, which contain the documents related to the response action selected for this site, [will be] [are] available to the public for inspection and comment. The primary location is generally the EPA Regional office. [Include specific information regarding the location and availability of the record file.]

## EPA CONTACT

If you or your attorney have any questions pertaining to this matter, please direct them to _____.

Sincerely,

Attachments