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RCRA, Superfund & EPCRA Call Center Training Module

Introduction to:

RCRA Corrective Action

Updated October 2001

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RCRA CORRECTIVE ACTION

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1. INTRODUCTION

This training module discusses the Resource Conservation and Recovery Act (RCRA) corrective action program. The corrective action program is a cleanup program designed to ensure the remediation of hazardous releases and contamination associated with RCRA-regulated facilities. Currently, EPA believes that there are approximately 6,400 facilities in need of corrective action. Of these, approximately 3,600 facilities have corrective action already underway or will be required to implement corrective action as part of the process to obtain a RCRA permit. EPA mandates corrective action at facilities primarily through permits and orders issued under the authority provided by the Hazardous and Solid Waste Amendments (HSWA) of 1984.

Rather than promulgating regulations with rigid steps for how to conduct corrective action, EPA has chosen to develop guidance and policy documents that emphasize results rather than process. Currently, EPA is implementing a set of administrative reforms that are designed to achieve faster, more efficient cleanups at RCRA corrective action sites. This module describes the current statutory and regulatory structure of the program and discusses the status of the RCRA Cleanup Reforms.

When you have completed this training module you will understand the purpose and application of the corrective action program. Specifically, you will be able to:

- List the statutory and regulatory authorities for corrective action and explain their application
- Describe how EPA is currently implementing the corrective action program and identify significant components of the RCRA Cleanup Reforms
- Understand the steps in the traditional corrective action process
- Describe the various regulatory provisions that allow for flexibility in the management of remediation wastes

Use this list of objectives to check your knowledge of this topic after you complete the training session.

2. PROGRAM HISTORY

EPA and authorized states have made considerable progress in implementing the corrective action requirements. Originally, the RCRA statute provided limited authority requiring cleanup at hazardous waste facilities. Only releases that presented imminent and substantial endangerment to human health and the environment or that originated from regulated units such as landfills and surface impoundments were subject to cleanup requirements. In 1984, HSWA added specific corrective action authorities to the RCRA statute, which authorized EPA to promulgate facility-wide corrective action provisions.

In 1990, EPA proposed a comprehensive, systematic approach to corrective action, which included detailed regulations to govern the technical (e.g., cleanup levels, site characterization) and procedural (e.g., definitions, permitting, oversight) elements for implementing the program (55 FR 30798; July 27, 1990). However, EPA finalized only a few sections of the proposal. After reevaluating the proposal and the implementation of the corrective action program, EPA published an advance notice of proposed rulemaking in 1996 (61 FR 19432; May 1, 1996). The advance notice opened a dialogue with the regulated community on ways to make the corrective action process shorter, cost-effective and less compartmentalized, while continuing to be protective of human health and the environment. EPA intended the advance notice to be used as guidance for implementing the corrective action program. As a result of significant public comment from stakeholders, EPA formally withdrew the 1990 proposal (64 FR 54604; October 7, 1999).

Currently, EPA is implementing a set of administrative reforms, known as the RCRA Cleanup Reforms, to the RCRA corrective action program. The reforms are designated to achieve faster, more efficient cleanups at RCRA sites that treat, store, or dispose of hazardous waste and have potential environmental contamination.

3. CORRECTIVE ACTION PROGRAM REFORMS

The RCRA Corrective Action program addresses cleanup of existing contamination at industrial facilities, most of which are currently operating. Congress, EPA, state agencies, and the general public believe the progress of RCRA cleanups should be improved. Moreover, the 1993 Governmental Performance Results Act (GPRA) required federal agencies, to devise a system to measure the effectiveness and progress of its regulations. These factors led EPA to analyze and advance the performance of the RCRA corrective action program.

EPA identified several factors that inhibit the efficiency and timeliness of the cleanup process. In some instances, cleanups have suffered from an emphasis on process steps, instead of process goals. An additional impediment to the cleanup process is the nature of the RCRA regulations themselves. RCRA regulations were set up to prevent environmental contamination by ensuring that waste is properly managed during its life cycle. The stringency of RCRA requirements often acts as a disincentive at contaminated sites, impeding the cleanup progress.

The RCRA reforms seek to reduce these hindrances by allowing more flexibility during the cleanup process. EPA has reformed the corrective action program by: addressing specific disincentives through regulatory changes; focusing on near-term goals; and stressing results-based approaches, instead of a process-based scheme.

3.1 REGULATORY FLEXIBILITY FOR CLEANUPS

Cleaning up RCRA facilities under the corrective action program may involve the management of large amounts of waste such as contaminated soils, water, debris, and sludges which contain a listed waste or exhibit a characteristic of hazardous waste. Such remediation wastes that are managed for the purpose of implementing corrective action requirements are generally subject to the same management standards as newly generated RCRA hazardous waste, including treatment, storage, and disposal facility standards and land disposal restrictions (LDR). These management standards are sometimes counterproductive when applied to cleanups because they may unnecessarily slow the corrective action process and increase the cost of corrective action without providing a concomitant level of protection of human health and the environment.

In order to mitigate the impact of these management standards on the corrective action program, EPA has implemented several regulatory changes that emphasize flexibility, including; (1) use of alternative permits at remediation waste management sites (2) alternative land disposal restrictions (LDR) for contaminated soils (3) special standards for remediation waste management units.

Remediation waste management sites are those facilities that would require a permit only to treat, store, or dispose of remediation waste generated from facility cleanup. The process of obtaining a permit can be time consuming and expensive, and may not be the most efficient way to conduct the cleanup activity. Therefore, the Agency promulgated a modified version of a permit, the remedial action plan (RAP) (63 FR 65874; November 30, 1998). Unlike the

traditional RCRA permit, the RAP is tailored to the needs of the remediation waste management site, and the permit application process is more streamlined (40 CFR Part 270, Subpart H).

Contaminated soil refers to soil that contains a listed hazardous waste or exhibits a hazardous waste characteristic. The LDR treatment standards for industrial wastes may be unachievable or inappropriate for contaminated soil due to particularities associated with the soil matrix and counterproductive in a remediation context. For these reasons, in 1998, EPA established alternative LDR treatment standards for contaminated soil (63 *FR* 28556; May 26, 1998). The alternative standards require that concentrations of hazardous constituents subject to treatment be reduced by 90 percent with a treatment cap for any given constituent of 10 times its universal treatment standard (268.49).

EPA also provided options for increased cleanup flexibility by establishing three remediation waste management units: temporary units (TUs), corrective action management units (CAMUs), and staging piles. Each of these units may be used at facilities to manage remediation waste on site, or within contiguous property under the control of the owner and operator. Owners and operators may not, however, use the units to manage as-generated process waste, to manage waste generated off-site, nor can the units themselves be used at off-site facilities. Although the units require some form of a permit, the owner and operator do not need to conduct facility-wide corrective action. The owner and operator may choose the unit that most appropriately fulfills the needs of the cleanup. Additionally, an area of contamination (AOC) can be equated to a RCRA land-based unit for purposes of cleanup.

The following table illustrates these types of units:

Type of Unit	Unit Structure	Time Limit	Management Activities
Staging Pile (264.554)	Pile	2 years plus one 180-day extension period	Storage
CAMU (264.552)	Designated Area or Unit within a facility	None	Treatment, Storage, and/or Disposal
Temporary Unit (264.553)	Tank or Container Storage Area	1 year plus extension period	Treatment and/or Storage
Area of Contamination	Land-based Area of Contamination	None	Storage, In-Situ Treatment, Disposal

3.2 ENVIRONMENTAL INDICATORS

Although the ultimate goal of the RCRA corrective action program is to achieve final cleanups, EPA assesses progress of the program using environmental indicators (EIs). EIs are measures being used to go beyond programmatic activity measures (e.g., reports received and approved) to track changes in the quality of the environment. There are two corrective action EIs, Current Human Exposures Under Control (also known as CA725) and Migration of Contaminated Groundwater Under Control (CA750). These environmental indicators are designated to aid facility decision makers by clearly showing where risk reduction is necessary, thereby helping regulators and facility owner/operators reach agreement earlier on stabilization measures or cleanup remedies that must be implemented.

These EIs are used to summarize and report on the site-wide environmental conditions at the 1,714 corrective action facilities that warrant attention in the near term (i.e., those on the RCRA Cleanup Baseline). Thus, they are being used as a mechanism to track the RCRA program's progress on getting the priority contaminated sites under control and report to the Office of Management and Budget (OMB), U.S. Congress, and the public. The goals set by EPA under GPRA are that by 2005, states and EPA will verify and document that 95 percent of the RCRA Cleanup Baseline facilities will have current human exposure levels under control, and 70 percent of these facilities will have migration of contaminated groundwater under control.

3.3 RCRA CLEANUP REFORMS

In addition, EPA has decided to focus on writing policy documents and guidance on corrective action, and to develop a set of targeted administrative reforms. These reforms, also known as the RCRA Cleanup Reforms, are EPA's comprehensive effort to remove obstacles to efficient cleanups, maximize program flexibility, and initiate progress toward a set of ambitious national cleanup goals.

In July 1999, EPA announced that first set of RCRA Cleanup Reforms. Specifically, these RCRA Cleanup Reforms will:

- Provide new results-oriented cleanup guidance with clear objectives
- Foster maximum use of program flexibility and practical approaches through training, outreach, and new uses of enforcement tools
- Enhance community involvement including greater public access to information on cleanup progress

In January 2001, EPA announced a second set of RCRA Cleanup Reforms. The RCRA Cleanup Reforms of 2001 highlight those activities that EPA believes would best accelerate program progress and foster creative solutions. These reforms reflect the ideas EPA heard from program implementors and stakeholders and introduce new initiatives to reinforce and build upon the 1999 Reforms. Specifically, the 2001 Reforms will:

- Pilot innovative approaches
- Accelerate changes in culture
- Connect communities to cleanups
- Capitalize on redevelopment potential

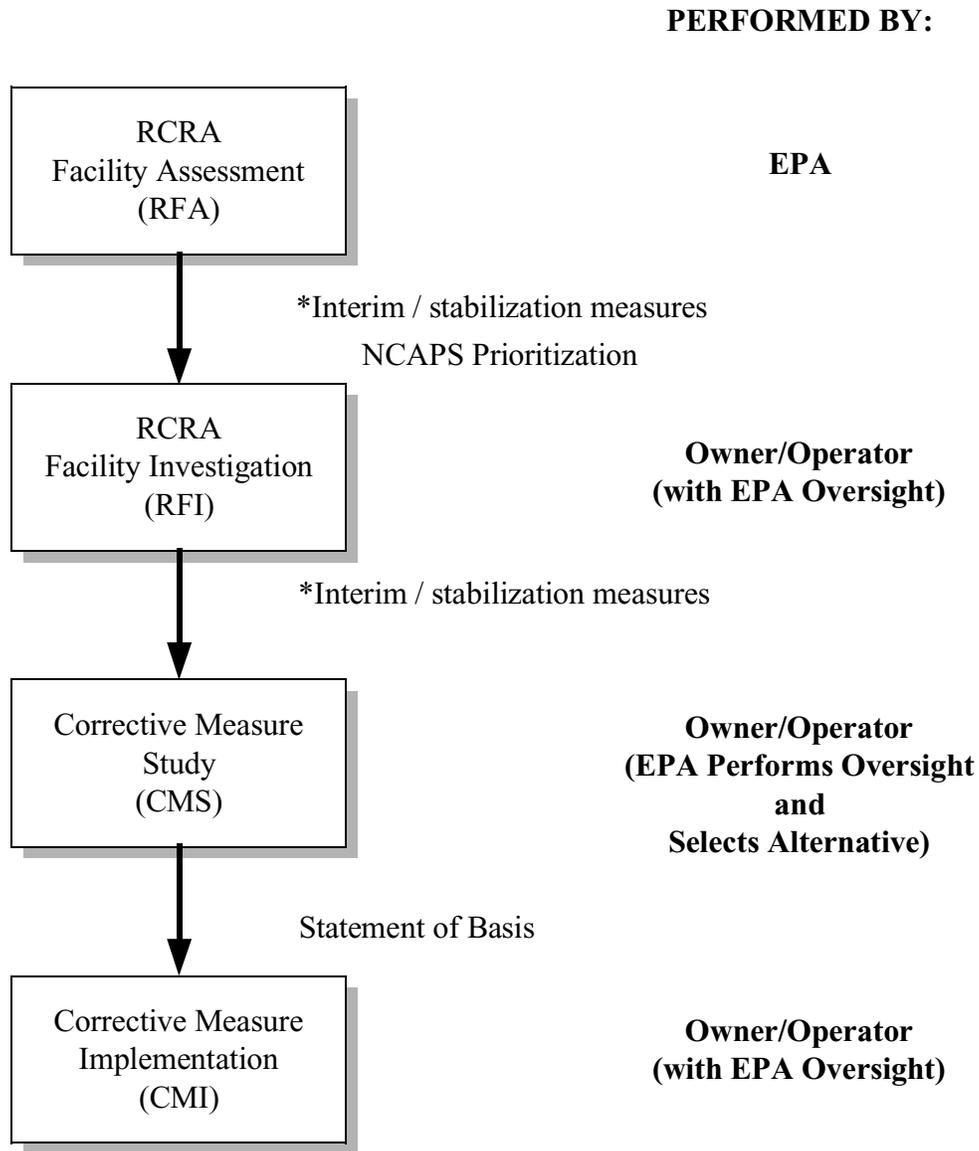
4. THE TRADITIONAL CORRECTIVE ACTION PROCESS

During corrective action at a facility, EPA typically evaluates and documents the nature and extent of contamination, identifies the physical and geographic characteristics of the facility, and identifies, develops, and implements appropriate corrective measures. The conditions at contaminated sites vary significantly, making it difficult to adhere to one rigid process. Consequently, the corrective action process is designated to be flexible; and the Agency will use only those portions of the process that are appropriate at a given site. While EPA no longer emphasizes the original corrective action process, this section of the module discusses the corrective action steps familiar to the regulated community.

The original corrective action process of investigations and remedy selection and implementation generally comprises six activities (Figure 1). These activities are not always undertaken as a linear progression towards final facility cleanup, but can be implemented flexibly to most effectively meet site-specific corrective action needs. These activities are not dictated by the regulations but are used by EPA in guidance documents relevant to corrective action. These six activities are:

- RCRA Facility Assessment (RFA) identifies potential or actual releases from SWMUs
- National Corrective Action Prioritization System (NCAPS) Ranking prioritizes the cleanup of the site relative to other sites
- Interim/Stabilization Measures implements measures to achieve high-priority, short-term remediation needs
- RCRA Facility Investigation (RFI) compiles information to fully characterize the release
- Corrective Measures Study (CMS) identifies appropriate measures to address the release
- Corrective Measures Implementation (CMI) designs and implements the remedy.

**Figure 1
TRADITIONAL CORRECTIVE ACTION PROCESS**



*stabilization evaluations may occur after an RFA or after an RFI, and interim/stabilization measures may be taken throughout the corrective action process.

RCRA FACILITY ASSESSMENT

Often the first activity in the original corrective action process is the RFA. The objective of the RFA is to identify potential and actual releases from SWMUs and make preliminary determination about releases, the need for corrective action, and interim measures. The RFA is conducted by the regulatory agency and generally occurs prior to permit issuance. If the facility is in interim status and is not seeking a permit, the RFA may take place before the facility closes. The RFA begins with a file review of information about the facility. The regulatory agency may then conduct a visual site inspection to confirm available information on SWMUs and to note any visual evidence of releases. Finally, a sampling visit may be performed to confirm or disprove suspected releases before an RFI is conducted.

NATIONAL CORRECTIVE ACTION PRIORITIZATION SYSTEM

It is EPA's policy to address the greatest corrective action needs first. Therefore, after initially assessing a site, EPA usually ranks the site's relative environmental cleanup priority and uses that ranking to allocate EPA resources. EPA uses NCAPS to rank and compare sites in the corrective action process. NCAPS is a computer-based ranking system that considers a variety of environmental factors in assessing the priority of sites. Environmental factors considered in the prioritization include types and volumes of wastes present, contaminant release pathways, and the potential for human and ecosystem exposure to contaminants. NCAPS generated a high, medium, or low ranking for each facility. The ranking is based on an evaluation of four pathways of actual or potential contamination (groundwater, surface water, air, and soils) and nationally established criteria for defining high, medium, and low. The information needed to assess a site by applying this system is usually obtained from the RFA and other available information, such as that from permit applications.

INTERIM/STABILIZATION MEASURES

Contaminated sites often present serious and immediate hazards which EPA must address quickly during the corrective action process. This process is called stabilization. The actions used to achieve the goal of stabilization are called interim measures or interim/stabilization measures. Interim/stabilization measures are short-term actions taken to respond to immediate threats to human health or prevent damage or contaminant migration to the environment. EPA evaluates the need and feasibility of interim/stabilization measures by conducting a stabilization evaluation. EPA may perform the stabilization evaluation after an RFA or after an RFI. Interim or stabilization measures may be taken at any time in the corrective action process and should be consistent with the final remedy.

RCRA FACILITY INVESTIGATION

Another activity in the corrective action process is the RFI. The RFI may take place when a release has been identified and further investigation is necessary. The purpose of the RFI is to gather enough data to fully characterize the nature, extent, and rate of migration of contaminants to determine the appropriate response action.

The investigation typically focuses on the specific units, releases, and exposure pathways identified as problematic earlier in the process to avoid unnecessary and unproductive investigations. Permittees may be required to submit a plan for conducting an RFL, which will be overseen by the implementing agency.

CORRECTIVE MEASURES STUDY

After the RFI is completed, and the regulatory agency determines based on available information that cleanup is necessary, the regulatory agency may request the owner and operator to conduct a CMS. The purpose of the CMS is to identify and evaluate cleanup alternatives for releases at the facility. The owner and operator identifies the appropriate corrective measures to address the threats posed by the releases, including measures to control the source of contamination and actions to abate problems caused by migration of contaminants from the source. The recommended measures are reviewed by EPA or the state and EPA selects the best remedy given site-specific considerations. EPA may request additional information or additional alternatives throughout this process. When a remedy is selected, the facility's permit is modified to include the remedy and a schedule of compliance. At that time the remedy is subject to public review and comment. In certain cases, a formal CMS may not be necessary; for example, when the remedy will clearly involve excavation or removal and other alternatives need not be considered.

STATEMENT OF BASIS

In addition to the permit modification EPA may also publish a statement of basis. This document describes the basis for EPA's remedy selection and an explanation for the cleanup levels chosen, and provides the public with an opportunity to comment on the remedy.

CORRECTIVE MEASURES IMPLEMENTATION

Once the implementing agency has selected a remedy, the facility enters the CMI phase of corrective action. During the CMI, the owner and operator of the facility implement the chosen remedy. This phase includes design, construction, maintenance, and monitoring of the chosen remedy, all of which are performed by the facility owner and operator with Agency oversight. A remedy may be implemented through a phased approach. Phases could consist of any logically connected set of actions performed sequentially over time or concurrently at different parts of a site. For example, if groundwater contamination is currently extending beyond the facility boundary it may be most important to address this problem first and address the larger remediation areas after the plume is under control.

5. CORRECTIVE ACTION IMPLEMENTATION

EPA implements the corrective action program principally through permits and orders issued under statutory authorities established by the Hazardous and Solid Waste Amendments of 1984 (HSWA). Prior to HSWA, EPA's authority to compel remediation of RCRA facilities was limited to:

- Section 3004(a) — required EPA to promulgate regulations establishing standards for hazardous waste treatment, storage and disposal facilities (TSDFs); EPA promulgated regulations pursuant to this statutory authority that requires cleanup of certain releases from hazardous waste treatment, storage, and disposal units.
- Section 3013 — authorizes EPA to order monitoring, testing, analysis, and reporting of information for facilities that may present a substantial hazard to human health or the environment.
- Section 7003 — authorizes EPA to order cleanups of situations that may present an imminent and substantial endangerment to human health and the environment.

HSWA added statutory provisions to RCRA that gave EPA substantial authority to develop a broader corrective action program than previously existed; however, the pre-HSWA authorities are still available for use where appropriate. Corrective action provisions added to RCRA include:

- Section 3008(h) — authorizes EPA to order corrective action, as necessary to protect human health and the environment, at interim status facilities.
- Section 3004(u) — requires facilities seeking a RCRA permit to conduct corrective action as necessary for solid waste management units; if corrective action cannot be finished before permit issuance, permit may contain corrective action schedules of compliance (promulgated in the regulations at 264.101).
- Section 3004(v) — requires corrective action through permit requirements for releases migrating beyond the facility boundary (promulgated in the regulations at 264.101).
- Section 3005(c)(3) — requires that permits contain all conditions EPA or the state determines is necessary to protect human health and the environment. This provision is often referred to as EPA's "omnibus" authority and has been used, for example, to require corrective action at "areas of concern" (AOCs).

EPA expects that the states will be the primary implementers of the corrective action program. Currently, 38 states have received authorization for RCRA corrective action and use their own statutory and regulatory authorities to implement the program. Additional states are also in the process of receiving corrective action authorization.

6. STATUS OF CAMUs

On February 16, 1993, EPA finalized the CAMU rule (58 ER 8658). The CAMU rule grants flexibility for implementing agencies to craft site-specific design, operating and closure/post-closure requirements for on-site units used for storage, treatment and disposal of hazardous wastes and contaminated media that are managed during cleanup. Importantly, use of a CAMU does not trigger LDRs or MTRs (minimum technological requirements). Instead, the implementing agency will determine specific treatment standards and technical standards for individual CAMUs.

Although the CAMU rule was supported by industry, environmental groups challenged its provisions three months after its promulgation. Their central concern was the CAMU's exception from LDRs and MTRs. In the 1996 proposed HWIR-Media rule, EPA comprehensively addressed remediation waste management. In that notice, EPA proposed to withdraw the 1993 CAMU rule, thus court action was stayed pending the final HWIR-Media rule. However, when EPA published the final HWIR-Media rule they decided to retain the CAMU provisions, thus the litigation continued.

In response to a court settlement, EPA issued a proposal to the CAMU rule on August 22, 2000. The proposal amends several components of the original CAMU rule. It clarifies the type of waste that can be managed in CAMUs, thus better distinguishing between as-generated wastes versus cleanup wastes. Existing CAMUs must have caps, and new CAMUs must meet minimum liner requirements. Wastes that contain "principal hazardous constituents" must meet minimum treatment standards or site-specific alternatives. Importantly, the proposal includes provisions for "grandfathering" existing CAMUs, and units that have started the approval process..

7. COORDINATION OF CLEANUP PROGRAMS

There are many instances where a contaminated hazardous waste site can be cleaned up under different regulatory programs. For example, there may be RCRA, CERCLA, or other state/tribal cleanup programs that EPA can use to address contamination. The Agency prefers to address such contaminated sites under a single program, but often individual program requirements prevent complete deferral. In instances where complete deferral from one program to another is not appropriate, EPA emphasizes coordination of cleanup programs in order to avoid duplication of efforts and second-guessing of remedial decisions.

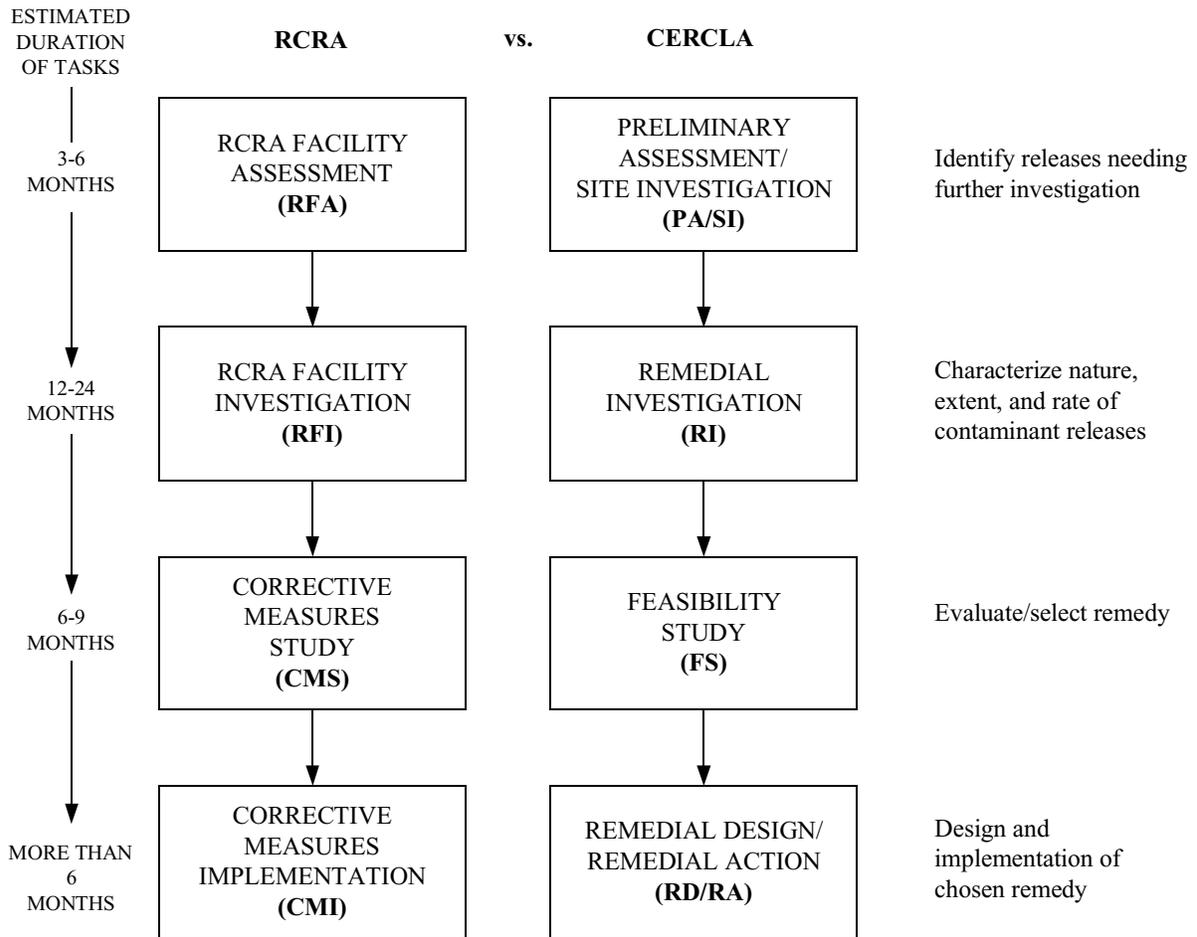
There are other instances where deferral from one regulatory cleanup program to another is appropriate. Because the RCRA corrective action process and the CERCLA remedial response process are very similar programs and follow roughly parallel procedures in responding to releases of contaminants (Figure 2), it may be more appropriate to address a site under RCRA rather than CERCLA (or vice versa). For example, where a contaminated site is an active RCRA-permitted facility, the Agency may decide that deferral to RCRA (instead of using CERCLA authorities) is most appropriate to accomplish cleanup of the site.

The Agency's position has been that a site that can be addressed by RCRA Subtitle C corrective action should be deferred from placement on the National Priorities List (NPL) unless it falls within certain exceptions, such as:

- The inability or unwillingness of the owner and operator to pay for addressing the contamination at the site
- Inadequate financial responsibility guarantees to pay for such costs
- EPA or state priorities for addressing RCRA sites would defer prompt action and delay could result in further significant contamination.

The NPL Deferral/Deletion policy also applies to federal facilities (62 [FR](#)62523; November 24, 1997).

Figure 2
Comparison of RCRA Corrective Action and CERCLA Remedial Processes*



*Interim Measures may be performed at any point in the corrective action process