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RCRA, Superfund & EPCRA Hotline Training Module

Introduction to:

RCRA Corrective Action

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RCRA CORRECTIVE ACTION

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1. INTRODUCTION

This module discusses the regulatory and statutory requirements and authorities governing the Resource Conservation and Recovery Act (RCRA) corrective action process. The corrective action program is a cleanup program designed to ensure the remediation of hazardous releases associated with RCRA-regulated facilities. EPA enforces the program principally through the statutory authorities established by the Hazardous and Solid Waste Amendments of 1984 (HSWA). There are minimal regulatory requirements at present, but the Agency has issued a proposed rule (55 FR 30798; July 27, 1990) that would establish a comprehensive regulatory framework for implementing the corrective action program. This proposed rule and other guidance developed pursuant to statutory authorities are used to structure corrective action requirements in facility permits and orders. This module describes the current statutory and regulatory structure and discusses the future of the proposed rule.

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 authorities for corrective action and explain their application
- Identify the existing regulatory authorities for corrective action, and explain their application
- Describe the four primary triggers for corrective action
- Describe the six main stages of the corrective action process
- Define terms that are specific to the corrective action process (e.g., solid waste management unit, action levels)
- Identify the proposed corrective action regulations and the schedule for a final rulemaking
- Assess whether or not financial assurance is required for corrective action
- Describe how the corrective action program can apply to generators and other facilities that do not require a permit.

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

2. REGULATORY SUMMARY

Prior to HSWA's enactment, EPA had limited authority to require remediation or corrective action measures at facilities regulated under RCRA. Statutory authority was limited to §7003, which gives EPA authority to take action when contamination presents an imminent hazard to human health or the environment. Regulatory authority was limited to 40 CFR Part 264, Subpart F. Subpart F only addressed releases of hazardous waste from regulated units into the uppermost aquifer (see the module entitled Groundwater Monitoring for details).

HSWA added statutory provisions to RCRA that gave EPA substantial statutory authority to develop a broader corrective action program. These provisions include:

- Section 3008(h) - provides authority to require corrective action at interim status facilities
- Section 3004(u) - requires corrective action be addressed as a condition of a facility's Part B permit
- Section 3004(v) - provides authority to require corrective action for releases migrating beyond the facility boundary.

These corrective action authorities are implemented on a case-by-case basis in facility permits or orders issued by EPA (§§264.101, 270.1(c), and 270.14(d)). EPA has not promulgated a comprehensive regulatory program describing the corrective action process. Currently, the corrective action process is defined by various policy and guidance documents. EPA promulgated special regulations regarding the management of remediation wastes generated during corrective action (§§264.552 and 264.553).

2.1 AUTHORITIES

The statutory authorities for RCRA corrective action as amended by HSWA follow. A brief description of each authority's application is provided.

IMMINENT AND SUBSTANTIAL ENDANGERMENT (§7003)

RCRA §7003 gives EPA broad enforcement authority to abate potential imminent and substantial hazards caused by releases of solid or hazardous waste from any source. Specifically, §7003 provides EPA with the authority to seek legal relief in the appropriate United States District Court or issue administrative corrective action

orders for releases from any site where the handling, storage, treatment, transportation, or disposal of solid or hazardous waste may pose an imminent and substantial endangerment to human health or the environment.

CONTINUING RELEASES AT PERMITTED FACILITIES (§3004(u))

RCRA §3004(u), added by HSWA, requires corrective action for all releases of hazardous waste or constituents from any solid waste management unit (SWMU) at a facility seeking a permit, regardless of when the waste was placed in the unit. A SWMU is any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. This definition includes any area at a facility where solid wastes have been routinely and systematically released. EPA interprets this authority to apply to any facility seeking a permit, including operating permits, post-closure permits, and permits-by-rule, after November 8, 1984 (50 FR 28712, 28715; July 15, 1985). The cleanup must address releases to air, groundwater, surface water, and soil. Furthermore, facilities are required to maintain the permit until corrective action is completed. Section 3004(u) also requires the Agency to include schedules of compliance and financial assurance for completing corrective action in a facility's permit when issued.

BEYOND THE FACILITY BOUNDARY (§3004(v))

While the authority for cleanup under §3004(u) is broad, it only applies to contamination on the contiguous property of a facility and does not address the migration of hazardous constituents beyond the boundaries of the facility seeking the permit. To address these concerns, Congress also amended RCRA with §3004(v). This section gives EPA the authority to require a facility owner/operator to clean up releases that have migrated beyond the facility boundary. Specifically, the owner/operator must institute corrective action wherever necessary to protect human health and the environment unless the owner/operator demonstrates to the satisfaction of the Regional Administrator that despite the owner/operator's best efforts, he or she was unable to obtain the necessary permission from adjacent property holders to undertake such actions (§264.101(c)). In addition, the Agency has asserted that financial responsibility must be demonstrated for these cleanup actions.

INTERIM STATUS CORRECTIVE ACTION (§3008(h))

Under HSWA Congress also gave EPA the authority to issue orders requiring cleanups at interim status facilities. This provision was added as §3008(h), which allows EPA to issue an administrative order or file a civil action whenever it determines on the basis of any information that there is or has been a release of hazardous waste into the environment from an interim status facility. This applies to facilities that are currently operating under interim status, that formerly operated under interim status, or that should have obtained interim status. It also applies to

any release of hazardous waste or constituents from the facility. In addition to requiring cleanup, EPA has the authority under §3008(h) to revoke or suspend interim status. Finally, as with §3004(v), EPA may use §3008(h) to require corrective action beyond the facility boundary and to require proof of financial assurance for cleanup.

2.2 EXISTING REGULATIONS

Presently the RCRA corrective action program is implemented largely through its statutory authorities and EPA guidance developed pursuant to those authorities. There are, however, some codified requirements.

Part 264, Subpart F requires corrective action for releases to groundwater from regulated units (e.g., landfills, surface impoundments). Under these regulations, corrective action is the third step of a three-phase program for detecting, characterizing, and responding to releases to the uppermost aquifer from regulated units. In the corrective action phase, the owner/operator is required to remove or treat in place all contaminants present in concentrations above previously determined protection levels (§264.100). This type of corrective action applies only to regulated units (§264.100) as opposed to all SWMUs (§264.101) and follows a slightly different procedure. This procedure is covered in the module entitled Groundwater Monitoring.

Facilities are also required to institute corrective action for releases of hazardous waste or constituents from SWMUs (§264.101). This section essentially reiterates the statutory language of §3004(u). Part 270 requires anyone seeking a RCRA permit to identify, in their permit application, any SWMUs found at their facility (§§270.1(c), 270.14(d)). EPA also promulgated regulations mitigating the regulatory burden of handling remediation wastes generated during the corrective action process (§§264.552, 264.553).

2.3 ENTERING THE CORRECTIVE ACTION PROCESS

One of the keys to understanding the RCRA corrective action program is knowing how a facility becomes subject to the corrective action process. A facility is not simply thrust into the program every time a spill of hazardous waste occurs. There are primarily four ways a facility becomes subject to corrective action. The first and most common uses RCRA §3004(u) and involves the identification of SWMUs during the permitting process. Second, a facility owner/operator may volunteer to perform corrective action. Third, EPA may issue an enforcement order, pursuant to §§7003 or 3008(h), requiring a facility to implement corrective action. The final trigger arises from groundwater monitoring. If a facility owner/operator detects statistically significant evidence of increased contamination over certain

concentration limits established in the permit, he or she must institute a corrective action program (§§264.91(a)(2) and (a)(3)).

2.4 THE CORRECTIVE ACTION PROCESS

The purpose of the corrective action process is to provide for controlled cleanup of contamination with the structure of the RCRA program. EPA uses the corrective action process to evaluate the nature and extent of contamination, identify the physical and geographic characteristics of the facility, and identify, develop, and implement appropriate corrective measures. This process is designed to be flexible; consequently, the Agency will use only those portions of the process that are appropriate.

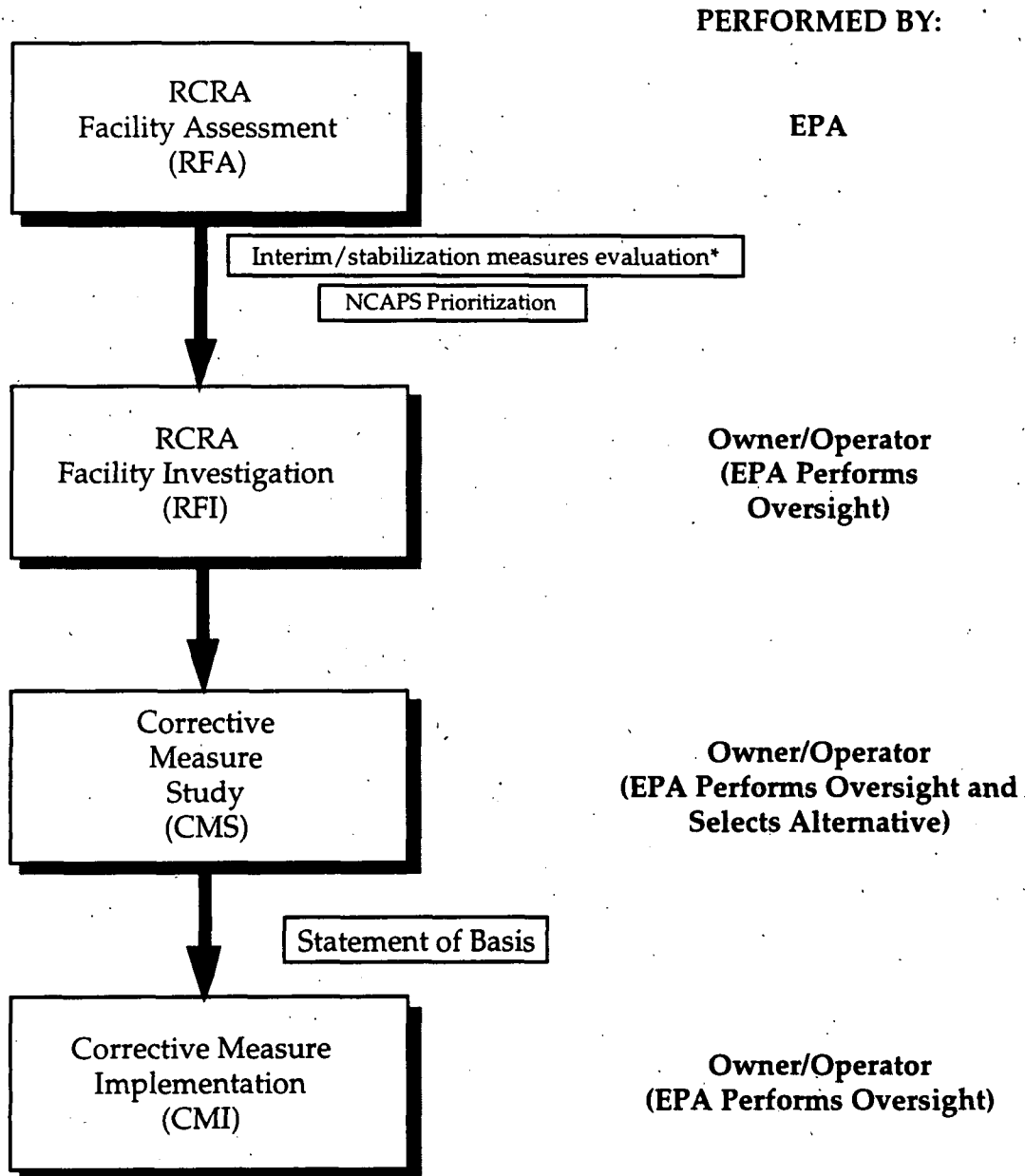
The corrective action process generally comprises six activities (Figure 1). Each serves to further focus the investigation, progressing from identifying potential concerns to investigating an actual problem and, finally, selecting a specific remedy. These terms are not dictated by the regulations but 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.

RCRA FACILITY ASSESSMENT

Often the first activity in the corrective action process is the RCRA facility assessment (RFA). The objective of the RFA is to identify potential and actual releases from SWMUs and make preliminary determinations about releases, the need for corrective action, and interim measures. The RFA is conducted by the regulatory agency and occurs prior to permit issuance (§270.14(b)). If the facility is in interim status and is not seeking a permit, the RFA would take place before the

**Figure 1
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.

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 worst corrective action needs first. Therefore, after initially assessing a site, EPA ranks the site's relative environmental cleanup priority and uses that ranking to allocate EPA resources. EPA uses the National Corrective Action Prioritization System (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 generates 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.

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 performs 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 RCRA facility investigation (RFI). The RFI takes place when a release has been identified during the RFA 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 should focus 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 RFI, which will be overseen by the implementing agency.

CORRECTIVE MEASURES STUDY

After the RFI is completed, and the regulatory agency determines (on the basis of the information available) that cleanup is necessary, the owner/operator must conduct a corrective measures study (CMS). The purpose of the CMS is to identify and evaluate cleanup alternatives for releases at the facility. The owner/operator must identify 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.

STATEMENT OF BASIS

In addition to the permit modification EPA should also publish a statement of basis. This statement describes the basis for EPA's remedy selection and an explanation for the cleanup levels chosen.

CORRECTIVE MEASURES IMPLEMENTATION (CMI)

Once the implementing agency has selected a remedy, the facility enters the corrective measures implementation (CMI) phase of corrective action. During the CMI, the owner/operator of the facility implements the chosen remedy. This phase includes design, construction, maintenance, and monitoring of the chosen remedy, all of which are performed by the facility owner/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.

2.5 FINANCIAL ASSURANCE

Under RCRA §3004(a)(6), EPA has broad authority to require that facilities subject to corrective action demonstrate financial assurance. On October 24, 1986, EPA proposed to formally codify these requirements for financial assurance at permitted facilities undergoing corrective action; however, these regulations were never finalized (54 FR 37854). As a result, financial assurance for corrective action at

permitted and interim status facilities is currently instituted through a permit or an order. Pursuant to §§3004(u), 264.101(b), 264.101(c), and 264.92(a)(2), EPA can require permitted facilities to demonstrate financial assurance for corrective action. Similarly, financial assurance for corrective action at interim status facilities may be required through a §3008(h) order. As stated in the May 1, 1996, advance notice of proposed rulemaking, EPA is considering other formal options regarding financial assurance for corrective action (61 FR 19432). For more information on this advance notice of proposed rulemaking, see section 4 of this module.

2.6 REMEDIATION WASTE

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" (§260.10) 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 TSDF 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 promulgated regulations that allow the use of alternative remediation waste unit standards that will ensure cleanups are fully protective while eliminating some of the regulatory hurdles associated with waste management. EPA accomplished this by creating two new management units: temporary units (TUs) and corrective action management units (CAMUs).

Temporary units are tanks or container storage areas that EPA designated to be used solely for the treatment or storage of remediation wastes during corrective action. By designating a tank or container storage area as a temporary unit, EPA may modify the design, operation, and closure technical standards normally applicable for such units for up to one year, unless EPA grants an extension. The TU must comply fully with all specific alternative unit standards set out in the facility permit.

CAMUs are physical, geographic areas within a facility designated for managing remediation wastes during corrective action (§260.10). By designating an area as a CAMU, EPA exempts that area from LDR and the land disposal unit minimum technology requirements (MTR). A CAMU can only manage remediation wastes during the corrective action process at the facility. Remediation wastes can originate only from within a facility, but may include wastes managed in implementing corrective action beyond the facility boundary pursuant to §§3004(v) or 3008(h). CAMUs may also be used for the purpose of remediation under §7003.

In the Hazardous Waste Identification Rule for Contaminated Media, or HWIR-media (61 FR 18779; April 29, 1996), EPA proposes to replace CAMUs with a new type of unit: a remediation pile. As stated in the proposal, upon promulgation of the final HWIR-media standards, new CAMUs cannot be approved, and existing CAMUs will be grandfathered, but allowed to continue operation for the duration of remedial activities. As with CAMUs, the new remediation piles can be used for storage of remediation waste during site cleanup without triggering LDR or MTR. On the other hand, the remediation piles will only be temporary and cannot be used for disposal. EPA expects to finalize these HWIR-media standards in June 1997. See the module entitled Hazardous Waste Identification for more details about the HWIR-media proposal.

3. SPECIAL ISSUES

The following two topics briefly address interface issues, first within the RCRA regulatory scheme and secondly between statutory programs.

3.1 CORRECTIVE ACTION vs. POST-CLOSURE PERMITS

The corrective action process is often closely interrelated with the closure process. Frequently, a closing unit has caused contamination of environmental media which necessitates corrective action during the post-closure period. Usually this corrective action is addressed through a post-closure permit pursuant to §3004(u). EPA has proposed to remove the requirement to address post-closure care through a post-closure permit when appropriate (59 FR 55778; November 8, 1994). The implementing agency would then have the freedom to use the most appropriate authority (e.g., §3008(h), groundwater monitoring corrective action pursuant to §264.100, CERCLA, state cleanup programs) to remediate the site (see the module entitled Closure/Post-Closure). States authorized for the corrective action program currently must only have authority to implement corrective action at permitted facilities. This rule would require states to adopt authority to address corrective action at interim status facilities. EPA expects to finalize these provisions in August 1996.

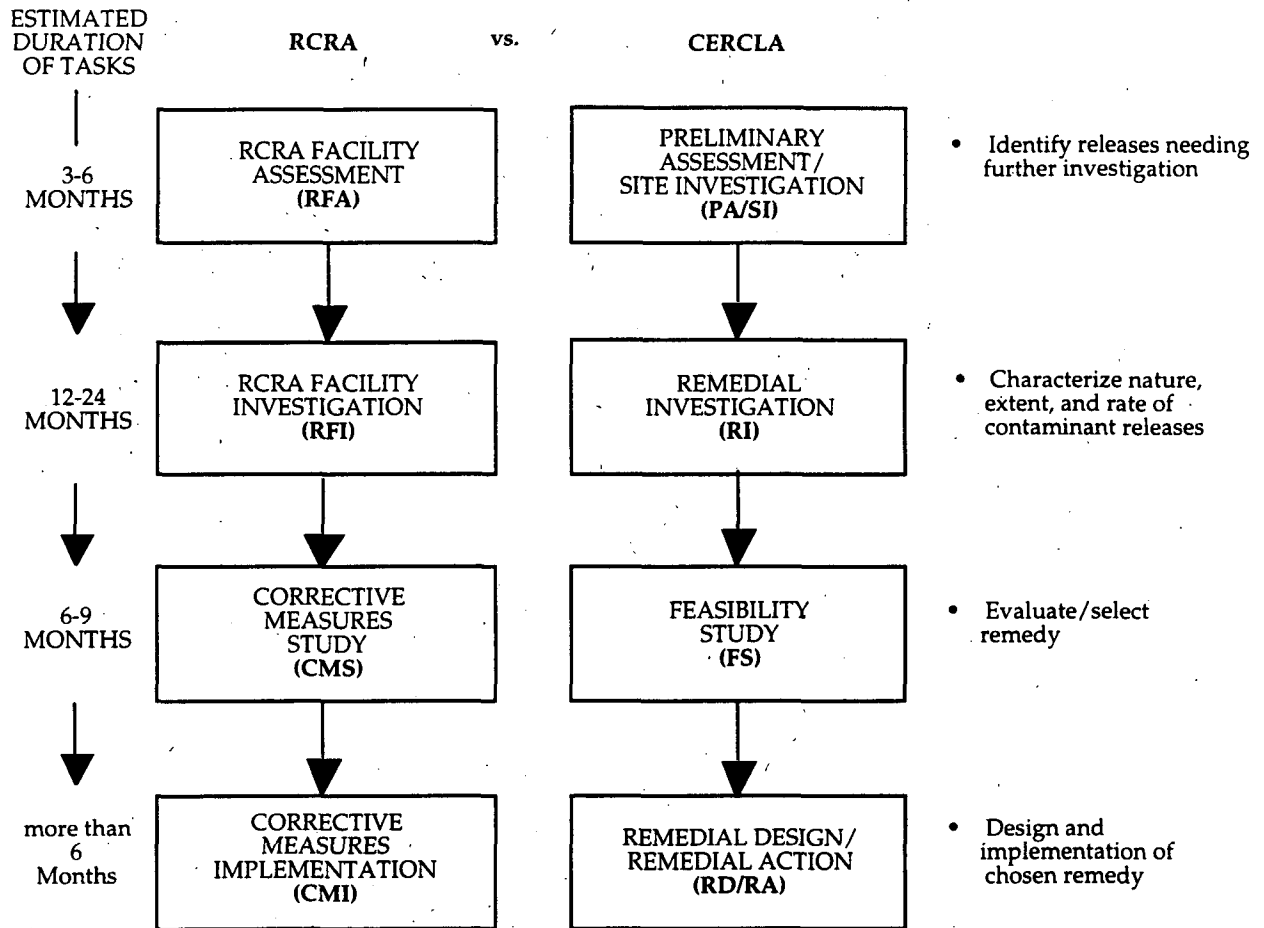
3.2 RCRA/CERCLA INTERACTION

The RCRA corrective action process and the CERCLA remedial process are very similar programs. They follow roughly parallel procedures in responding to releases of contaminants (Figure 2). Sometimes the two programs overlap. For example, where a contaminated site is an active RCRA-permitted facility, the Agency may consider whether the use of RCRA or CERCLA authorities (or both) 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 NPL unless it falls within certain exceptions, such as:

- The inability or unwillingness of the owner/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 policy does not apply to federal facilities.

**Figure 2
COMPARISON OF RCRA CORRECTIVE ACTION
AND CERCLA REMEDIAL PROCESSES***



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

4. REGULATORY DEVELOPMENTS

HSWA expanded corrective action authorities for both permitted and interim status RCRA facilities. The new corrective action authorities became effective on November 8, 1984, the date of HSWA enactment. Implementing corrective action regulations are codified at §§264.101, 270.1(c), and 270.14(d). Since the initial HSWA codification rulemaking, EPA proposed a more comprehensive, systematic approach to corrective action, which would be codified as Part 264, Subpart S (55 FR 30798; July 27, 1990). This proposal addresses corrective action for SWMUs at facilities subject to RCRA permitting.

The 1990 proposal received significant public comment. Although EPA finalized only a few sections of the proposal — the provisions promulgating regulations for CAMUs and TUs (see Section 2.6 of this module for more information) — the bulk of this proposal was never finalized, but is still used as guidance during corrective actions.

In an effort to reevaluate this proposal in light of experience in implementing the corrective action program since 1986, the Agency published an advance notice of proposed rulemaking (61 FR 19432; May 1, 1996) to introduce EPA's strategy for promulgation of corrective action regulations, and to expand on the Agency's philosophy and priorities. The advance notice opens a dialogue with the regulated community on ways to make the corrective action process shorter and cost-effective for the regulated community and for the Agency; to create more consistent, less compartmentalized cleanups; to establish protective but "common sense" cleanup expectations; and to shift more responsibility for compliance to states and the regulated community.

The notice also gives the regulated community direction and guidance on the current corrective action polices, relating the status of the corrective action process to other rulemaking efforts such as the Hazardous Waste Identification Rule (HWIR), the post-closure permitting rule, state authorization revisions, and administrative improvements and reforms under Superfund. EPA expects to re-propose a comprehensive corrective action program in September 1996, and finalize the regulations in late 1997.