DOE/EH-0001

Environmental Guidance

RCRA CORRECTIVE ACTION & CERCLA REMEDIAL ACTION REFERENCE GUIDE

July 1994

U.S. Department of Energy
Office of Environmental Guidance
RCRA/CERCLA Division, EH-231
Washington, D.C.

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United States Government **Department of Energy**

memorandum

DATE: July 19, 1994

REPLY TO ATTN OF: Office of Environmental Guidance (EH-231):DiCerbo:6-5047

SUBJECT: RCRA Corrective Action and CERCLA Remedial Action Reference Guide

TO: Distribution

Attached for your information is a copy of the *RCRA Corrective Action and CERCLA Remedial Action Reference Guide*. This Reference Guide is a concise, side-by-side overview of major topics and steps of the RCRA corrective action and CERCLA remedial action processes. It focuses on the statutory and regulatory requirements of each program. It also draws observations and comparisons of the ways in which authorities or regulatory requirements under each program overlap or differ.

This Reference Guide complements the detailed guidance, *"A Comparison of the RCRA Corrective Action and CERCLA Remedial Action Processes,"* recently distributed to program offices and field organizations.[1]

Questions concerning the attached guide may be directed to Jerry DiCerbo of my staff at (202) 586-5047.

Thomas T. Traceski
Director, RCRA/CERCLA Division
Office of Environmental Guidance

Attachment

[1]EH-231 memorandum, dated February 15, 1994, entitled: *"Comparison of the RCRA Corrective Action and CERCLA Remedial Action Processes"* (Publication DOE/EH-0365).

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Remedial Action Program Information Center
Center for Environmental Management Information

RCRA Corrective Action & CERCLA Remedial Action Reference Guide

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PREFACE

This guide is intended as a concise, side-by-side overview of key aspects and steps of the RCRA Corrective Action and CERCLA Remedial Action processes. It focuses on the statutory and regulatory requirements under each program, criteria and other factors that govern a site's progress through each process, and the ways in which authorities or requirements under each program overlap and/or differ. The breadth and complexity of each program cannot be represented fully in a reference guide of this nature. Instead, users are directed to specific sections of RCRA, CERCLA, the National Contingency Plan (NCP), the proposed corrective action rule, and DOE or Executive Orders for clarification and further information.

Terminology differs between the two programs, and some terminology is confusing (e.g., EPA uses the terms "corrective measure" and "remedy" somewhat interchangeably in the proposed corrective action rule). This guide uses generic terminology for topics and discussion/comparisons, but program-specific terminology in the descriptions.

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COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION[1]

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Intent of Regulation	To protect human health and the environment by establishing a comprehensive regulatory framework for **investigating and addressing past, present, and in some cases, future environmental contamination** at hazardous waste treatment, storage, and disposal facilities	To protect human health and the environment by establishing a comprehensive regulatory framework for **investigating and remediating uncontrolled releases of hazardous substances**	CERCLA addresses uncontrolled releases of hazardous substances, often from facilities no longer in operation where contamination resulted from past practices; RCRA focuses on prevention and remediation of releases from currently operating facilities.
Administration	Federal, State, or combined Federal/State program **EPA or authorized State has lead** **Facility owner/operator is responsible for site investigations** (Proposed 40 CFR §264.500) • EPA or authorized State may conduct RCRA Facility Assessment (RFA)	Federal program **DOE has lead**, with oversight/concurrence from EPA and authorized State **Federal agency that owns the facility is responsible for site investigations** (Executive Order 12580) • EPA is responsible for developing Hazard Ranking System (HRS) score, and if necessary, National Priorities List (NPL) listing, based on information provided by responsible agency	
Types of Sites and/or Facilities	RCRA **interim status facilities** (RCRA §3008(h), 40 CFR §265), RCRA **permitted facilities** (RCRA §3004(u), Proposed 40 CFR §264.500), and **offsite** (RCRA §3004(v)) Corrective action for releases to groundwater also is authorized under 40 CFR part 264 subpart F EPA or authorized State may order remedial action at a site where evidence of imminent or substantial danger to human health or the environment exists (RCRA §7003)	**Any site where an uncontrolled release** of a hazardous substance, pollutant, or contaminant exists or is threatened (40 CFR §300.400)	EPA or authorized State may respond under CERCLA to sites subject to RCRA Subtitle C (54 FR 41000, October 4, 1989).

[1]The discussion of corrective action refers to the proposed Subpart S corrective action program under Subtitle C for solid waste management units at hazardous waste management facilities; it does not include programs under Subpart F (ground water), Subtitle D (solid waste), and state programs

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Definition of Site and/or Facility	All contiguous property under the control of the owner/operator of a **facility seeking a permit** under RCRA subtitle C (Proposed 40 CFR §264.501) • "Contiguous property" includes property that is separated only by a public right-of-way (e.g., roadway or power line)	Any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or any site or area **where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located** (CERCLA §101(9)) • The term "on-site" means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action (40 CFR 300.400(e)) • Above definition does not include any consumer product in consumer use or any vessel (CERCLA §101(9))	Under both rules, a facility or site is identified by property boundaries for legal reference purposes; however, **any place where contamination from the site has migrated is considered to be part of the facility or site**. This means that the "site" or "facility" is defined by the areal extent of contamination, not by property boundaries, including any contamination that has migrated beyond property boundaries.
Constituents of Concern	Corrective action authority applies to **substances defined as hazardous waste and/or hazardous constituents under RCRA** (Proposed 40 CFR §264.500) • Hazardous wastes are defined in RCRA §1004(5) and 40 CFR §261.3 and are listed in Subpart D of Part 261 • Criteria for identifying the characteristics of and for listing hazardous wastes are provided in Subpart B of Part 261 • Hazardous constituents are listed in Appendix VIII of 40 CFR part 261 and/or Appendix IX of 40 CFR part 264 • Mixed radioactive and hazardous chemical waste are subject to corrective action authority	Remedial authority applies to **all hazardous substances, pollutants, or contaminants as defined by CERCLA §101(14) and §101(33)**, including substances defined, designated, or listed pursuant to: • RCRA §3001 • Federal Water Pollution Control Act §307(a) and §311(b)(2)(A) • CERCLA §102 • Clean Air Act §112 • Toxic Substances Control Act §7	Although there is broad overlap in contaminants of concern, standard analytical methods and QA/QC procedures differ significantly under both programs. This may make it difficult to use data collected under one program for the other.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Exclusions	Corrective action authority does not apply to substances excluded from the definition of hazardous waste under RCRA as specified in Subpart A of Part 261, **including radioactive substances which are source, special nuclear, or by-product material as defined by the Atomic Energy Act** (40 CFR 261.4(a)(4)) • For sites with mixed radioactive and hazardous waste, Atomic Energy Act authority applies to the radioactive component, and RCRA authority applies to the hazardous waste component Although polychlorinated biphenyl (PCB) wastes regulated under the Toxic Substance Control Act are excluded from the definition of hazardous waste under RCRA (40 CFR §261.8), corrective action authority under RCRA section 3004(u) applies to PCBs because PCBs are listed as a constituent in Appendix VIII of 40 CFR part 261	Remedial authority does not apply to the following substances excluded from the definition of hazardous substance in CERCLA §101(14): • Petroleum, including crude oil or any fraction thereof which is not otherwise listed or designated as a hazardous substance under subparagraphs (A) through (F) of CERCLA §101(14) • Natural gas natural gas liquids, liquefied natural gas, synthetic gas usable for fuel, or mixtures of natural gas and synthetic gas usable for fuel **Remedial authority does not apply to incidents excluded from the definition of a release in CERCLA §101(22), including:** • **Nuclear incidents subject to the financial protection requirements of the Atomic Energy Act** • **Radioactive releases from the 22 processing sites designated in UMTRCA** EPA policy excludes radioactive releases from facilities with a current license issued by the Nuclear Regulatory Commission (48 FR 40658) **For DOE facilities that are not licensed or permitted by the NRC, EPA policy also excludes releases of radionuclides that meet the policies, guidelines, and requirements, and do not exceed limits, specified in DOE Orders**	Radionuclides generally are exempt under RCRA, and petroleum/natural gas products generally are exempt under CERCLA, but at least one of these remedial authorities applies to nearly all substances present at DOE sites.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Provisions for Short-term Remedies	***Conditional Remedies* must achieve the following criteria** (Proposed 40 CFR 264.525(f)): • Be protective of human health and the environment; • Achieve all media cleanup standards (MCS) beyond the facility boundary as soon as practical; • Prevent further contamination and environmental degradation by using source controls; • Prevent exposures at the facility; • Continue monitoring activities to prevent significant environmental degradation; and • Comply with waste management standards specified in proposed 40 CFR §§264.550-264.559.	An ***interim measure* that does not meet an ARAR may be selected** if it will become part of a total remedial action that will attain the ARAR (40 CFR 430(f)(1)(ii)(C))	Both rules emphasize permanent remedies but allow short-term remedies under certain circumstances. Short-term remedies are not considered final remedies under either rule.
Triggers for Initial Site Investigation	*RCRA Facility Assessment* (RFA) required if: • Facility **applies for permit** to treat, store, or dispose of hazardous waste (Proposed 40 CFR §264.500); • Facility **discovers release or potential release** from a solid waste management unit (SWMU) at a permitted or interim status facility (Proposed 40 CFR §264.500); or • Facility **discovers a SWMU** which was not examined during previous RCRA Facility Assessment (RFA) at facility (Proposed 40 CFR §264.500). **EPA or authorized State may initiate process** based on their own findings of a release or concerns about a potential release (Proposed 40 CFR §264.510)	*Preliminary Assessment* (PA) required following **"discovery" by EPA, States, notification by facility which caused the release, or citizen petition (40 CFR 300.405)** • Facility is listed on Federal Agency Hazardous Waste Compliance Docket (CERCLA §120(c)) • EPA places site in CERCLA Information System (CERCLIS) database or the State requests that the site be placed on CERCLIS	Response under both authorities generally is triggered if EPA, authorized State, or facility determines that hazardous wastes, substances, or constituents have been or are likely to be released into the environment. RCRA response generally is triggered by actions at the facility; CERCLA response generally is triggered externally (i.e., Docket listing or actions of EPA, States, citizens). Initial investigation under one authority may trigger response under the other.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Short-term Response Actions	**EPA or authorized state may require an Interim Measure or Stabilization** to abate, minimize, stabilize mitigate, or eliminate a release or threat of release, considering the following factors (proposed 40 CFR §264.540): • Time required to develop and implement a final remedy; • Actual or potential exposure of nearby populations or environmental receptors to hazardous wastes or hazardous constituents; • Actual or potential contamination of drinking water supplies or sensitive ecosystems; • Further degradation of the medium which may occur if remedial action is not initiated expeditiously; • Presence of hazardous wastes or constituents in drums, barrels, tanks, or other bulk storage containers, that my pose a threat of release; • Presence of high levels of hazardous wastes or constituents in soils largely at or near the surface that may migrate; • Weather conditions that may cause hazardous wastes or constituents to migrate or be released; • Risks of fire or explosion, or potential for exposure to hazardous wastes or constituents as a result of an accident or failure of a container or handling system; and • Other situations that may pose threats to human health and the environment. **[Update 9/99**: It should be noted that if there is evidence of conditions posing an imminent and substantial endangerment to health or the environment, EPA may choose to issue an order to abate those conditions as quickly as possible under the imminent hazard provisions of Sect. 7003 of RCRA instead of Sects. 3004(u), 3004(v), or 3008(h).**]**	**EPA or other lead agencies may undertake *Removal Actions*** to abate, prevent, minimize, stabilize, mitigate, or eliminate a release or threat of release, considering the following factors (40 CFR § 300.415): • Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants, or contaminants; • Actual or potential contamination of drinking water supplies or sensitive ecosystems; • Hazardous substances, pollutants, or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of a release; • High levels of hazardous substances, pollutants, or contaminants in soils largely at or near the surface, that may migrate; • Weather conditions that may cause hazardous substances, pollutants, or contaminants to migrate or be released; • Threat of fire or explosion; • Availability of other appropriate federal or State response mechanisms to respond to the release; and • Other situations or factors that may pose threats to public health, welfare, or the environment.	**Language in two rules is essentially identical**, however the National Contingency Plan (NCP) requires consideration of other appropriate federal or State response mechanisms.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Site Investigations	*RCRA Facility Assessment (RFA)* • **Limited investigation of existing information** about a facility to identify SWMUs and determine whether actual or potential release exists (RCRA §264.500) — Includes visual site inspection and, in some cases, analytical sampling • Timetable for conducting RFA generally none specified, but schedule of compliance **may be specified in the TSD permit** (Proposed 40 CFR §264.512(b)), court action, or RCRA Order[2] • Potential outcomes: — Modification of TSD permit to require a RCRA Facility Investigation (RFI) (permitted facilities); — RCRA Order issued for RFI (interim status facilities); — Determination that an interim measure is or is not required; or — Permit application continues through process.	*Preliminary Assessment (PA) and Site Inspection (SI)* • **Limited investigations of existing information** about a facility to determine whether further investigation required under CERCLA (40 CFR §300.420) — PA generally is a low-cost, "desktop" investigation using readily available information — The SI generally involves a greater level of effort, is more tailored to site conditions, and usually includes a site visit to obtain analytical (sampling) data • CERCLA §120(d) requires completion of PA within 18 months of listing on Federal Agency Hazardous Waste Compliance Docket (57 FR 31758, July 17, 1992); no set timetable for SI • Specific requirements are specified in EPA PA Guidance and SI Guidance • Potential outcomes: — Determination that an SI is required (after PA) or listing on the National Priorities List (NPL) is warranted (after SI); — Determination that Site Evaluation is Accomplished and notification of other authorities; or — Determination that a removal action is or is not	The PA and SI are used to gather specific data required for developing the Hazard Ranking System (HRS) score. The RFA is not used to gather information for scoring, but determines whether further investigations are necessary. The RFA and the PA and SI obtain and evaluate many of the same general types of data. However, the PA and SI require specific types of data in a specific format (driven by the HRS scoring requirements). Thus, data collected for an RFA may or may not be useable for the PA or SI (and vice-versa). The RFA focuses primarily on characterizing SWMUs and the nature of wastes released. The PA and SI place greater emphasis on investigating the migration of contaminants beyond site boundaries and to receptors. Interim measures or removal actions may be required at any time in the process.

[2]The Federal Facility Compliance Act allows EPA or authorized States to use all types of RCRA orders (e.g., 3008(a), 3008(h), 3013, 7003) or analogous State orders to require corrective action at DOE sites

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Trigger for Remedial Investigations	Determination that **hazardous waste or hazardous constituents have been, or in certain limited circumstances are likely to be released from a SWMU** (proposed 40 CFR §264.510)	Initial **HRS score ≥ 28.5 is required for further evaluation** and possible listing on the NPL. • At PA, preliminary, "maximum" HRS score is developed using conservative scoring assumptions • SI data collection must be sufficient to develop final HRS score Final **HRS score ≥ 28.5 and listing on the NPL are necessary for EPA to require Remedial Investigation/Feasibility Study (RI/FS)** • HRS score below 28.5 does not preclude State or other authorities from requiring remedial investigations (or DOE from initiating such investigations)	Proposed corrective action rule contains no specific provisions for facility owners to challenge decision by EPA or authorized State to require an RFI, although dispute resolution mechanisms exist (55 FR 30850). NPL listing is a rulemaking process which includes a period of public comment. The final HRS score can be challenged legally (and has been successfully) by potentially responsible parties. Federal facilities where releases are addressed through RCRA are eligible for inclusion on the NPL and may be evaluated using the HRS (54 FR 16520, March 13, 1989).
Initiating Remedial Investigations	**EPA or authorized State and DOE typically enter into an agreement** to conduct an RFI • For permitted facilities, specific RFI requirements are a condition of the TSD permit and will be included in the schedule of compliance (proposed 40 CFR §270.34) • For interim status facilities, specific RFI requirements will be included in the RCRA §3008(h) Order, which may be issued unilaterally by EPA or the State — RCRA §3008(h) enforcement authority will not be delegated to the States (55 FR 30855, July 27, 1990), although States may have an analogous statute	DOE and EPA and/or authorized State enter into an agreement to conduct an RI/FS via either a **Federal Facility Agreement (FFA) or a CERCLA §120 Interagency Agreement (IAG)** DOE Order 5400.4 requires an FFA or IAG within 6 months of listing on NPL	**EPA intends to coordinate the application of RCRA and CERCLA authorities through use of CERCLA §120 IAGs.** The IAG will provide the vehicle for explicitly defining the procedural and technical requirements for corrective action, in satisfaction of the statutory and regulatory authorities of both RCRA and CERCLA.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Remedial Investigations	*RCRA Facility Investigation (RFI)* • General purpose is to characterize the nature, extent, direction, rate, movement, and concentration of releases, determine the potential need for corrective measures, and aid in selection and implementation of those measures (Proposed 40 CFR §264.511), including: — Physical characteristics and classifications of the site and environmental media; — Characterization of SWMUs, including unit and waste characteristics; — Descriptions of human and ecological receptors; — Analyses of current concentrations and extrapolations of future movement, degradation, and fate of contaminants; — Preliminary treatability studies; and — Statistical analyses and other factors that assist in assessing risks. • Specific purpose(s) described in TSD permit (schedule of compliance) or RCRA Order and may evolve as RFI progresses • Technical requirements, procedures, and reports outlined in Proposed 40 CFR §§264.511-264.513 and DOE's *Corrective Action Program Guide* • Interim Corrective Measures Study (CMS) may be required (Proposed 40 CFR §264.511(a)(6))	*Remedial Investigation (RI)* • General purpose is to collect data necessary to adequately characterize the site for purposes of developing and evaluating effective remedial alternatives (40 CFR §300.430(d)) • Generally involves field studies, including treatability studies, and a baseline risk assessment to assess the following factors: — Physical characteristics and classifications of the site and environmental media; — General waste characteristics, including quantities, state, concentration, toxicity, bioaccumulation, persistence, and mobility; — The extent to which sources can be adequately identified and characterized; — Actual and potential exposure pathways and exposure routes; and — Other factors that pertain to characterization of the site or support analysis of potential remedial alternatives. • Specific purpose(s) tailored to specific circumstances of individual facilities and may evolve as RI progresses • Technical requirements, procedures, and reports outlined in DOE's *Remedial Investigation/ Feasibility Study (RI/FS) Process and Techniques Guidance*	There are no major differences in the overall goals and purposes of the RFI and RI; however, the RI generally occurs only if there is evidence that the site poses some risk, whereas EPA or authorized State may order an RFI without conclusive evidence of a release above action levels. The RFI is potentially more flexible than the RI, because it may, but is not required to, include all of the steps of an RI, although EPA has begun requiring CERCLA baseline risk assessments as part of the RCRA process. Both rules allow phased investigations and/or subdividing large facilities into smaller functional units for investigation and remediation. Streamlined process being developed under DOE's Streamlined Approach for Environmental Restoration (SAFER) projects is consistent with both rules. EPA or authorized State may require interim measures (RCRA) or expedited response/emergency action (CERCLA) without waiting for completion of RFI or RI.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Trigger for Evaluation of Remedial Alternatives	*Corrective Measures Study (CMS)* required when: • Concentration of one or more hazardous constituent exceeds an action level (Proposed 40 CFR §264.520(a)) • EPA or authorized State determines that the concentration of one or more hazardous constituents which are below action levels may pose a threat to human health or the environment (Proposed 40 CFR §264.520(b)) If no CMS is required, Determination of No Further Action issued and other authorities notified (proposed 40 CFR §264.514) • Class III Permit modification for permitted facilities • Revocation of RCRA Order for interim status facilities	The *Feasibility Study (FS)* is concurrent with the RI (40 CFR 300.430(e))	EPA or authorized State has broad authority to require a CMS, even when current contamination does not exceed action levels. An RI is always associated with an FS, while an RFI is not necessarily followed by a CMS.
Remedial Alternatives	*Corrective Measures Study (CMS)* • General purpose is to evaluate corrective measures and select an alternative • Specific purpose(s) described in TSD permit (schedule of compliance) or RCRA Order and may evolve as CMS progresses • Technical requirements, procedures, and reports outlined in Proposed 40 CFR §§264.522-264.524 and DOE's *Corrective Action Program Guide*	*Feasibility Study (FS)* • General purpose is to evaluate remedies and select an alternative • Specific purpose(s) tailored to specific circumstances of individual facilities and may evolve as FS progresses • Technical requirements, procedures, and reports outlined in DOE's *Remedial Investigation/ Feasibility Study (RI/FS) Process and Techniques Guidance*	Both the CMS and the FS develop, screen, and lead to the formal evaluation of cleanup alternatives. The CMS emphasizes the effectiveness of technologies that can be combined into remedial alternatives, while the FS focuses on the protectiveness of remedies balanced against their cost-effectiveness.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Cleanup Criteria	*Media Cleanup Standards (MCS)* are concentrations of hazardous constituents in environmental media that are protective of human health and the environment (Proposed 40 CFR §264.525(d)) • MCS generally are not set below background	*Preliminary Remedial Goals (PRGs)* are acceptable exposure levels that are protective of human health and the environment (40 CFR §300.430(3))	Both rules stress protection of both human health and the environment. CERCLA is more explicit in requiring consideration of standards and criteria established under other federal and State laws. Although preliminary cleanup criteria under both rules potentially may be identical, it is possible for the two programs to develop different criteria for the same source/release.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Evaluating Alternatives and Selecting Final Remedy	Standards for Remedies (Proposed 40 CFR 264.525(a)) • Protection of human health and the environment • Attainment of media cleanup standards (MCS) • Reduction or elimination, to the extent practicable, of further releases that may pose threats to human health or the environment • Compliance with waste management standards specified in proposed 40 CFR §§264.550-264.559 Remedy Selection Factors (Proposed 40 CFR 264.525(b)) • Long-term effectiveness and permanence of the alternative, along with the degree of certainty that the alternative will prove successful • Reduction of toxicity, mobility, or volume through treatment • Short-term risks to public health, workers, and the environment and the time required to achieve protection • Ease or difficulty of implementing the alternatives, including technical, administrative, and logistic feasibility • Capital and annual O&M cost, net present value of capital and annual O&M cost, and potential future remedial cost	Threshold criteria (40 CFR §300.430) • Overall protection of human health and the environment • Compliance with ARARs Primary balancing criteria (40 CFR §300.430) • Long-term effectiveness and permanence of the alternative, along with the degree of certainty that the alternative will prove successful • Reduction of toxicity, mobility, or volume through treatment • Short-term risks to public health, workers, and the environment and the time required to achieve protection • Ease or difficulty of implementing the alternatives, including technical, administrative, and logistic feasibility • Capital and annual O&M cost and net present value Modifying criteria (40 CFR §300.430) • State acceptance • Community acceptance	RCRA emphasizes technical effectiveness and achievement of compliance with applicable regulations to ensure protection of human health and the environment, while CERCLA emphasizes balancing a variety of statutory mandates and regulatory requirements with cost-effectiveness considerations. RCRA uses cost estimates to ensure that funds are available to provide appropriate remedies and long-term care. Both RCRA and CERCLA use cost estimates to eliminate alternatives which are similar in protectiveness but vary significantly in cost. Both rules allow waiver of enforceable MCS or PRGs under certain circumstances. CERCLA explicitly includes State and community acceptance as evaluation criteria; RCRA includes public participation during the process but not as part of the evaluation criteria.

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Final Remedy	*RCRA Permit Modification and Statement of Basis* (Proposed 40 CFR §264.526) • EPA or authorized State modifies TSD permit or RCRA Order to require implementation of corrective measure(s) — Permit modification must follow process described in 40 CFR §270.41 • EPA or authorized State develops Statement of Basis document to provide general information about corrective measure(s), selection process, and criteria — Identifies proposed corrective measure and reasons for it — Describes other corrective measures which were considered — Solicits public review/comment — Provides information addressing public involvement in corrective measure selection process • General standards and selection factors for corrective measure(s), and guidelines for schedule, cleanup standards, compliance, and permit modifications specified in Proposed 40 CFR §§264.525-264.526 • Technical requirements, procedures, schedule, and reports specified in TSD permit or RCRA Order • Phased remedies are allowed, but only via TSD permit modifications (Proposed 40 CFR §264.526(d))	*Record of Decision (ROD) and Interagency Agreement (IAG)* (40 CFR §300.430(f)) • Formal, legal mechanism for documenting remedy selection process and analyses and policy determinations that support selection of final remedy — Remedy selection is joint responsibility of DOE and EPA (40 CFR §300.430(f)(4)) — EPA has authority to unilaterally select remedy if agreement cannot be reached (40 CFR §300.430(f)(4)) • ROD requires a Proposed Plan, public participation, and comment response (40 CFR §300.430(f)) • DOE must enter into an IAG or FFA (and ROD must be signed) within 180 days of EPA's acceptance of RI/FS (CERCLA §120(e)(2))	Decision process is broadly similar, and the RCRA Statement of Basis is analogous to the CERCLA Record of Decision. However, CERCLA specifically provides DOE (as lead agency) with joint responsibility for selecting remedy, while RCRA does not. Proposed corrective action rule contains no specific provisions for permitted facility owners to challenge decision by EPA or authorized State to require a specific remedy, although there may be dispute resolution clauses in a RCRA Order or FFA/IAG. Both rules allow selection of the no-action alternative if cleanup is impractical or will not reduce risk substantially. CERCLA also allows selection of the no-action alternative if risk is low and cleanup is too costly.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Implementing Remedy	*Corrective Measures Design and Implementation* (Proposed 40 CFR §§264.527-264.529) • EPA or authorized State may require and may need to approve: — Detailed construction plans and specifications (Proposed 40 CFR §264.527) — Progress reports (Proposed 40 CFR §264.528) • EPA or authorized State must review progress and has the authority to modify the TSD permit schedule of compliance to require additional corrective measures (Proposed 40 CFR §264.529) • Schedule of implementation **will be specified in the TSD permit or §3008(h) Order** (Proposed 40 CFR §264.525(c))	*Remedial Design (RD)* (40 CFR §300.435) • EPA may require and may need to approve detailed plans of remedy (40 CFR §300.435(b)92)) • Requirements for DOE to submit design and planning documents to EPA generally included in the Consent Agreement for the Remedial Action, the FFA, or the IAG *Remedial Action (RA)* (40 CFR §300.435) • Generally involves construction, testing, and implementation of selected remedy in ROD • EPA may conduct periodic inspections of the RA process • Progress reports may be required under the FFA or IAG • ROD must be formally amended via rulemaking process if final remedial action fundamentally alters the basic features of the selected remedy with respect to scope, performance, or cost (40 CFR §300.435(c)) • On-site remedial action must begin **within 15 months after the RI/FS is completed** (CERCLA §120(e)(2))	Both processes are similar in deferring many key engineering decisions related to the final remedy. Both rules allow flexibility in modifying selected remedies based on technical or practical difficulties (e.g., facility owner cannot get permission to conduct remedial actions beyond facility boundary). CERCLA requires communication with the local community during implementation of the remedy and a formal rulemaking process to make fundamental changes in the remedy. RCRA requires communication with the public for "major" permit modifications, and communication with the public may be negotiated as part of the RCRA Order or FFA/IAG.

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
On-site Waste Management	*Corrective Action Management Units (CAMUs)* (58 FR 8658, February 16, 1993) • Designated area at a facility for managing remediation wastes[3] during corrective action • Disposed wastes are not subject to land disposal restrictions; unit is not subject to minimum technology requirements for a new or lateral expansion of a unit *Temporary Units (TUs)* (58 FR 8658, February 16, 1993) • Tanks and container storage areas used for treatment storage of remediation wastes • Operating time limited to one year or less, although exemptions are possible • Not subject to Subtitle C design, operating or closure standards, although other requirements apply (40 CFR 264.553(a) and (c))	**Action-specific ARARS establish controls or restrictions** for on- and off-site waste management activities (40 CFR §400(g)(iv)) • RCRA standards (e.g., closure of hazardous waste disposal sites, incineration standards) apply to CERCLA waste management activities	CAMUs/TUs under RCRA allow more flexibility in managing wastes on-site than ARARs under CERCLA. CAMUs/TUs may be an ARAR under CERCLA. States are not obligated to adopt CAMU/TU rule.

[3]Remediation wastes are defined in 40 CFR 260.10 as all solid and hazardous wastes, and all media (including ground water, surface water, soils, and sediments) and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action requirements under 40 CFR 264.101 and RCRA Section 3008(h). For a given facility, remediation wastes may originate only from within the facility boundary, but may include waste managed in implementing RCRA Section 3004(v) or Section 3008(h) for releases beyond the facility boundary. CAMUs/TUs cannot be used to manage wastes generated from ongoing production processes or other industrial activities (i.e., "as-generated wastes") or to manage off-site wastes brought on-site (unless the off-site wastes resulted from cleaning up a release originating on-site).

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Completion of Remedy	Remedy is considered complete **when EPA or authorized State determines the following** (Proposed 40 CFR §264.530): • Compliance with cleanup standards specified in the TSD permit or RCRA Order is achieved; • All actions required to control sources of contamination have been satisfied; and • Procedures specified for removal, decontamination, closure, or post-closure care of units, equipment, devices, or structures have been complied with. EPA or authorized State may determine that compliance with the remedy requirement(s) is not technically practicable and modify the TSD permit schedule of compliance accordingly (Proposed 40 CFR §264.531)	Remedial action is considered complete **when EPA or authorized State determines the following** (40 CFR 300.435(f)): • Contamination is reduced to levels protective of human health and the environment; • Specific cleanup levels and remedial activities specified in ROD are completed; • Remedy is fully operational and performing to design specifications; and • Remaining activities only involve operation and maintenance. DOE completes Superfund Site Closeout Report (or Interim Closeout Report in the case of long-term remedial action)	Although both rules present general criteria for terminating the remedy, neither rule provides explicit "stopping rules" for determining whether a given cleanup goal has been achieved.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Completion of Remedial Process	**RCRA Permit Modification to end corrective action for permitted facilities** • EPA or authorized State modifies TSD permit to terminate corrective action according to Class III procedures of 40 CFR §270.42 • Class III permit modification requires public notification and a period of public comment **Revocation of RCRA Order for interim status facilities**	**Deletion from NPL** (40 CFR §300.425(e)) • Facility is eligible for NPL deletion when: — DOE and EPA or authorized State determine that all required response actions have been implemented; and — Contamination is reduced to levels protective of human health and the environment. • NPL deletion is a rulemaking process that includes a period of public comment • CERCLA §121(c) requires EPA to conduct 5-year reviews at facilities where: — Attainment of cleanup levels specified in ROD will not allow unlimited use or unrestricted access; and — Hazardous substances will remain at levels on-site that prevent unlimited use or unrestricted access, and attainment of acceptable levels will take more than 5 years.	Both rules require public notification and a period of public comment to formally terminate the process.

COMPARISON OF RCRA CORRECTIVE ACTION AND CERCLA REMEDIAL ACTION (continued)

Topic	RCRA Corrective Action	CERCLA Remedial Process	Discussion/Comparison
Follow-on Activities	**None specified** (process is terminated with permit modification or revocation of RCRA Order) • Closure/post closure activities are required for approximately 30 years after termination of RCRA permit or interim status • EPA or authorized states may extend the post-closure care period well beyond 30 years if determined to be necessary to protect human health and the environment (RCRA §264.117(a)(2)(ii))	*Operation and Maintenance (O&M)* (40 CFR §300.435(f)) • Generally occurs at facilities where remedy involves a permanent structure used to contain contaminated materials • Nominal duration is 30 years, but EPA may revise this up or down to address site-specific conditions **Natural Resource Damage Assessment** (CERCLA §107(f) and Clean Water Act §300(f)95)) • If natural resources are or may be injured by the release, natural resource trustees may initiate appropriate actions • Natural resource trustees are identified in 40 CFR §300.600 and include the Secretary of Energy • Responsibilities of natural resource trustees are presented in 40 CFR §300.615	CERCLA allows NPL deletion when long-term remedies have been implemented but not completed. RCRA does not include a specific provision for natural resource damage assessment (NRDA), but RCRA does not specifically prohibit actions by trustees under CERCLA, and NRDA may apply to RCRA facilities.