Final Remedy Selection

This document is part of the training materials for the RCRA Corrective Action Workshop on Results-Based Project Management. It contains summaries of EPA statutory authorities, regulations, and guidance materials. This document does not substitute for any of these authorities or materials. In addition, this document is not an EPA regulation and therefore cannot impose legally binding requirements on EPA, States, or the regulated community. EPA may change this document in the future, as appropriate.

Objectives

Participants will:

- Know where to find recommended performance standards and supporting information for final remedies
- Know when formal evaluation of alternative(s) should be conducted for final remedies
- Know the factors to consider when evaluating final remedies

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Notes:

This module describes remedy selection processes, criteria, and tools for final remedies at RCRA Corrective Action sites.

This module also provides some tools that project managers can use to organize and assess the information they need to consider when documenting and implementing remedies.

This module does not provide guidance on how to conduct detailed technical evaluations of different potential remedies, however, the toolbook provides helpful exercises dealing with remedial technologies.

Regulator Choices for Remedy Selection

- Review remedy recommendation (see case study at end of module)
- Given owner/operator recommendation, would you:
  - approve it?
  - request modifications? If so, which ones?
  - request an additional approach be considered? If so, what approach?

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Key Questions to Address

- What are lead agency roles and responsibilities?
- Against what performance standard and criteria do you evaluate a remedy?
- What are expectations for the number of remedial alternatives to evaluate?
- What administrative process should you use to evaluate a final remedy?

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Notes:

A major cross-cutting factor in addressing several of these questions is how certain do you need to be in the data you have, and how much uncertainty can you live with now and manage when the remedy is being implemented?

Summary of Roles and Responsibilities

- Owner/operator should recommend a remedy; lead agency evaluates it
- Number of alternatives can vary
- Lead agency role(s) vary from review/approval of the details of remedy selection to review/approval of performance basis

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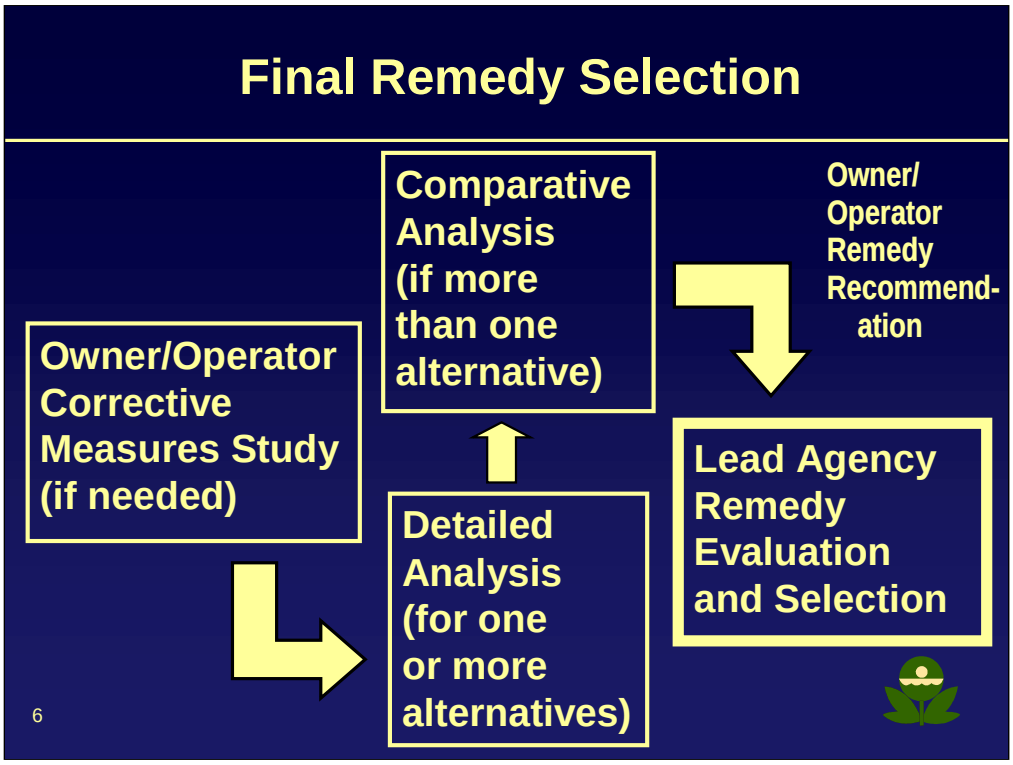
Notes:

Owner/operator should prepare a remedy recommendation, based on data that are submitted as part of the corrective measures summary (CMS), or are sufficient in their own right to be submitted without a formal CMS.

For some sites (e.g., low priority), paperwork supporting the remedy recommendation may remain in site files unless the lead agency requests to see it.

Lead agency evaluates the remedy recommendation using criteria that will be discussed in more detail later. The number of alternatives an owner/operator evaluates may vary with:

- size/complexity of site
- ability of a single technology to adequately meet criteria



Notes:

Remedy Selection Fact Sheet, found in the back of this module, describes each of these elements in more detail.

Summary of Responsibilities and Elements for Final Remedies

		Owner/Operator Remedy Recommendation		
	Owner/ Operator Corrective Measures Study (CMS) (if necessary)	**Detailed Analysis (for one or more alternatives)**	**Comparative Analysis (if more than one alternative)**	**Lead Agency Remedy Evaluation and Selection**
Key Elements	Identification and sufficient description of corrective measure alternative(s) to determine whether it meets overall remedy performance standards and remedial expectations Provides key information to compare the corrective measure alternative(s) to appropriate threshold remedy selection criteria	Evaluation of alternative against each performance standard and evaluation/balancing criterion	Evaluation of each remedy against evaluation/balancing criteria to determine "best" remedy (if multiple alternatives are proposed) or evaluation against each balancing criteria to ensure a single remedy would meet remedy performance standards	Select and provide documented rationale for remedy recommendations
Roles/ Responsibilities	Owner/Operator prepares CMS or equivalent documentation as part of another document EPA/State reviews CMS or equivalent against elements to determine adequacy	Owner/Operator prepares remedy recommendation EPA/State reviews remedy recommendation for completeness and sufficiency to be able to determine advantages and disadvantages of each alternative against each criterion	Owner/Operator prepares necessary comparative analysis to identify preferred alternative or to show acceptability of a single alternative EPA/State reviews comparison of alternatives or acceptability analysis	Owner/Operator provides support and input to remedy selection process EPA/State, after reviewing public input, makes final remedy decision

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Notes:

Corrective measures studies (CMS) provide, to the degree necessary, the evaluation of remedial alternatives against the appropriate criteria. They also serve to design the alternative(s) to a sufficient degree to allow remedy review and approval.

CMSs are initiated early on in concept, although much of the site-specific documentation may not be available until some investigation steps are conducted.

Where problems are definable early in site planning activities and a problem statement can be written, the major focus of the investigation may be what is traditionally thought of as the CMS. That is, the investigation can focus on data needs relating to evaluating and recommending/approving technologies to remediate the problem.

The degree of lead agency oversight may vary depending on the priority of the site, the desire of the regulators to be involved, and cooperation by the owner/operator.

Expectations for Remedy Evaluation (CMS or Equivalent)

- Evaluate only appropriate, implementable approaches, consistent with expected future land uses
  - Scope and substance of CMS tailored to the extent, nature, and complexity of problems
- Overlap with site characterization
- Limited agency oversight, as appropriate, if releases and performance measures are well defined
- Evaluation of multiple alternatives not required if single alternative meets performance standard

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Notes:

The CMS obviously should provide the data and evaluation to support the decision-making criteria. This includes Corrective Action Results, performance standards, criteria, and media cleanup objectives.

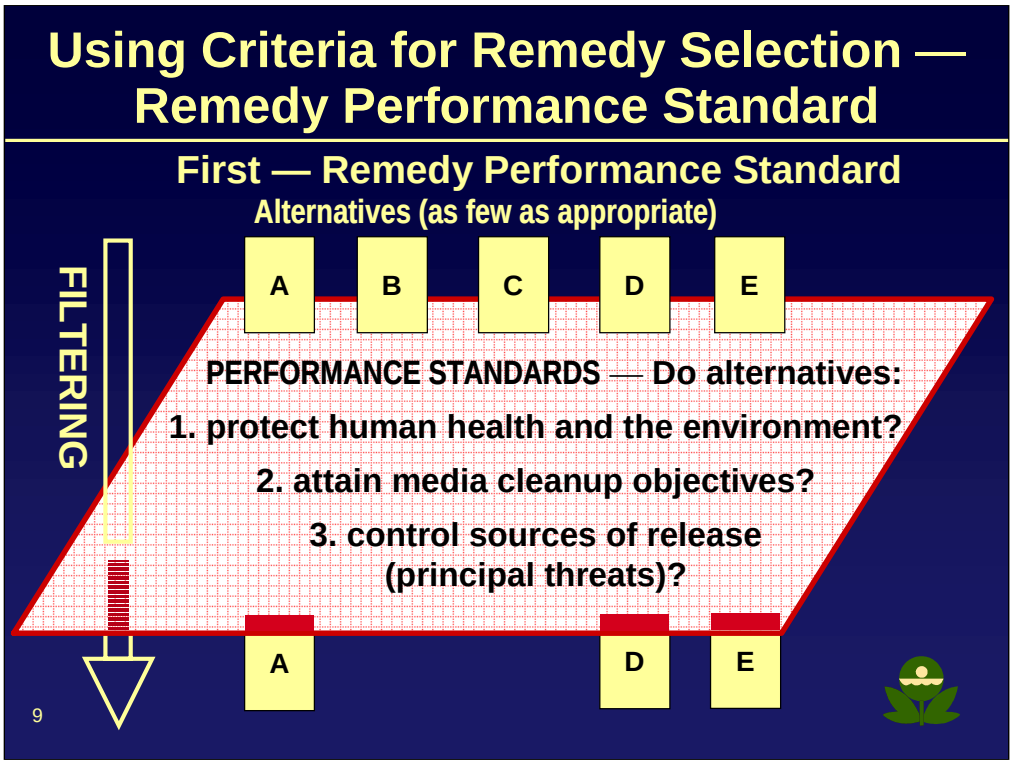
Where technical impracticability (TI) recommendations are made by owner/operators, lead agency role may include evaluation of possible technologies that could be effective.

Primary references on the use of institutional controls include: "Institutional Controls: A Reference Manual," US EPA Workgroup on Institutional Controls, Draft, March 1998.

Establish Performance Monitoring Systems as Part of the Remedy

Data collection decisions do not stop with characterization (pre-remedy). Performance monitoring plans are a part of the remedy recommendation, and should be able to answer whether or not the remedy is implemented:

- The remedy is working as desired (short term);
- The remedy has met performance standards; and
- Whether new conditions affect long-term achievement of Corrective Action Results.



Notes:

The criteria for evaluation of remedies have evolved. Three performance standards now comprise the threshold that any remedy proposed or selected should meet, and seven criteria comprise the evaluation/balancing criteria.

The concept of the performance standard as a "filter" and the evaluation/balancing criteria as a "scale" is an appropriate analogy. That is, remedies should meet all three performance standards. Those that provide the best balance among the other criteria are preferred.

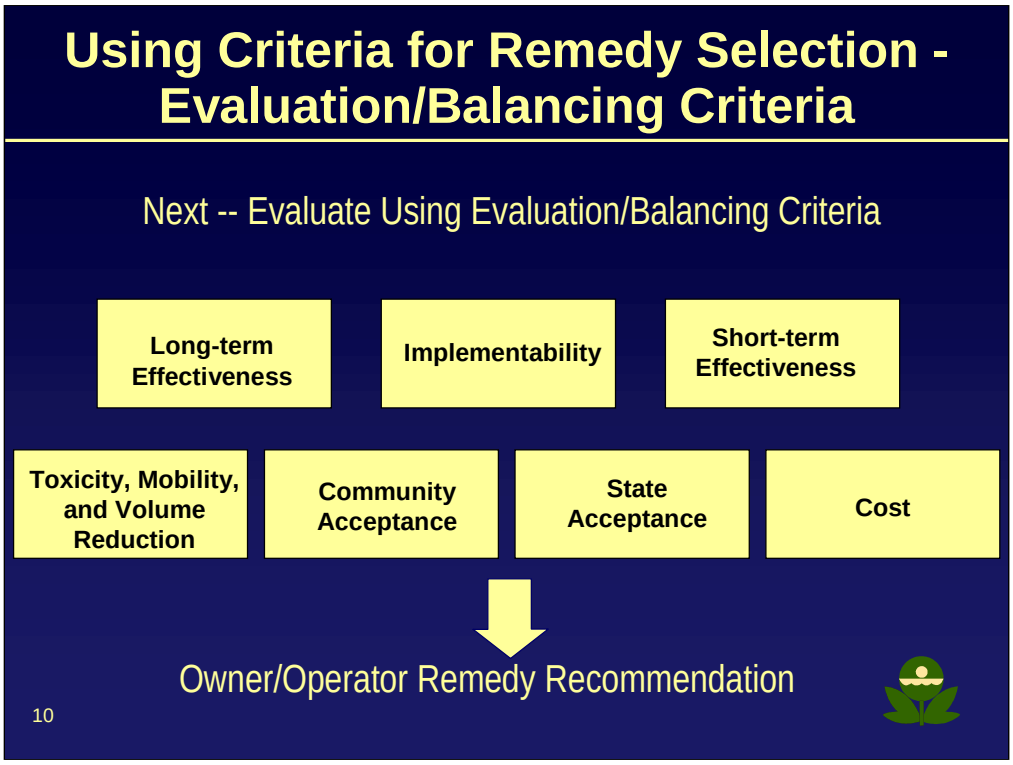
For a single alternative, these criteria:

•Serve as basis to determine if EPA judges the remedy recommendation adequate

•Result is approval, recommended modification, or request that the owner/operator to develop additional alternatives

For multiple alternatives:

•Allows identification of "recommended" or "best" approach



Notes:

EPA intends to place small emphasis in selecting remedies on the long-term effectiveness criterion, that is the ability of any remedial approach to provide adequate protection of human health and the environment over the long term. Thus, source control technologies that involve treatment of contamination, or that otherwise do not rely on containment structures or systems to ensure against future releases, will be strongly preferred to those that offer more temporary, or less reliable, controls. Long-term effectiveness should consider reasonably anticipated future land uses.

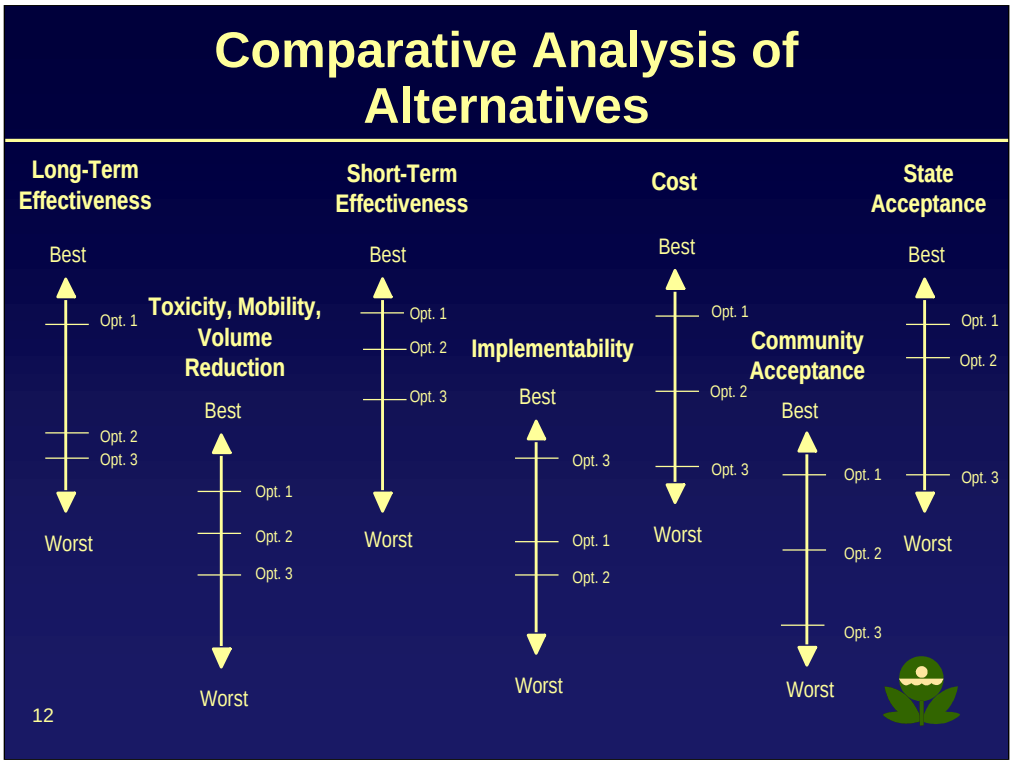
Reduction of toxicity, mobility, or volume is directly related to the concept of long-term reliability of remedies. As a general goal, remedies are preferred that employ techniques that are capable of permanently reducing the overall degree of risk posed by the wastes and constituents at the facility. Reduction of toxicity, mobility or volume is this a means of achieving the broader objective of long-term reliability.

Short-term effectiveness may address factors such as magnitude of reduction of existing risk, and time until full protection is achieved. It also addresses risks that might be posed to community, workers, or the environment during implementation.

Notes (Cont.):

Implementability will often be a determining variable in shaping remedies. For example, some technologies will require State or local permits prior to construction, which may increase the time needed to implement the remedy. Also, the evaluation should include an assessment as to whether the remedy is implementable with respect to future land use.

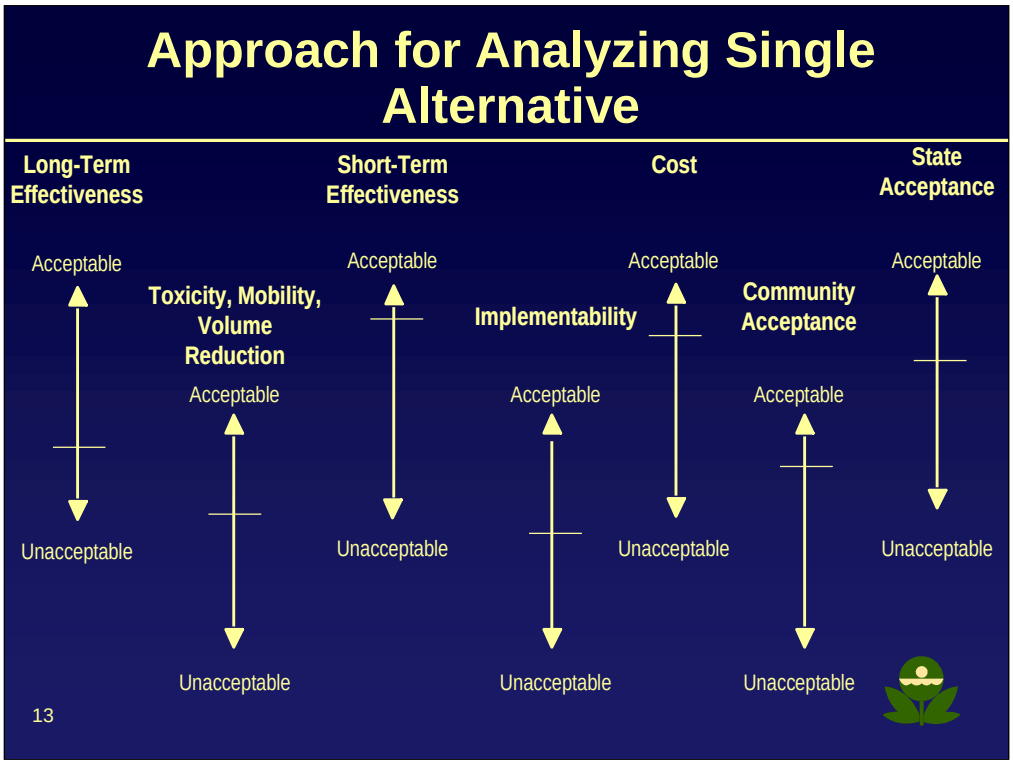
Community acceptance should include an analysis of the local planning agency's plan for potential reuse of the property.



Notes:

This tool portrays a qualitative use of the balancing criteria when more than one alternative is being considered.

The intent is to determine whether one alternative or option offers an overall "better" balance of the seven criteria.



Notes:

This tool portrays a qualitative evaluation of how acceptable a single alternative is against the seven criteria. The outcome can be a judgement that certain modifications to the remedy might make it more acceptable.

The Statement of Basis/Response to Comments

- The purpose is to document and communicate the proposed and selected final remedy to the public
- It is a combination of existing information from planning, investigations, and evaluations
  - Problem statements
  - Residual uncertainty management strategies
  - Alternative analysis tools

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Notes:

The Statement of Basis/Response to Comments summarizes the:

- Facility background
- Environmental setting for the site
- Problems for the site
- Corrective Action activities already conducted (e.g., interim measures and stabilization techniques)
- EPA's public participation activities (communication blueprint)
- Applicable Corrective Action Results
- Type and concentration of contaminants present
- Exposure pathways, including those based on current as well as reasonable expected future uses
- Carcinogenic and non-carcinogenic risks to be addressed
- Ecological risks to be addressed
- Cleanup levels or goals
- Innovative technology considerations

Notes (Cont'd):

The Statement of Basis/Response to Comments also identifies other information including:

- Remedy selection
- Residual uncertainties
- Final remedy

References: "*RCRA Corrective Action Decision Documents: the Statement of Basis and Response to Comments. Directive No. 9902.6,*" April 29, 1991.