

8.0 EVOLVING ISSUES

During development of this guide, several important issues were identified for which there is currently limited information. Strategies and guidance for addressing these issues will evolve as more installations encounter them and additional experience is accumulated in their management. Among these are:

- Institutional controls
- RA-O/LTM optimization (including remedy updates)
- Records management
- CERCLA natural resource injury and damage assessments

While these issues are not addressed in detail in this, important considerations associated with them that relate to the site closeout process are discussed in the following sections.

8.1 Institutional Controls

Institutional controls (ICs) as described in the NCP are non-engineering methods used to prevent human exposure to contaminants remaining at hazardous waste sites above health-based screening levels. ICs are generally used to supplement treatment or engineering remedies. IC is not a term used in real property law. The term was originally used in the context of environmental cleanup activities. Currently, the term IC is applied broadly to describe land use restrictions in many contexts. This broad usage is reflected in some state and Federal guidance. It is important to note that as used in this document the term IC is the same as described in the NCP.

The comparative analyses section of the FS should analyze the IC supporting or complimenting each alternative including, to the extent practicable, the relative cost of implementation and monitoring of the proposed IC. Once remedial alternatives, including ICs, have been identified, the remedy selection process is applied to evaluate the alternative as a whole, including any ICs involved. For example, using the remedy selection process under CERCLA, the restoration project team will develop a proposal on which the public and regulatory agencies will be invited to comment both in writing and at a public meeting. A response to those comments will be prepared, and a response action selected. Throughout the remedy selection process, the ICs will be evaluated in the same manner as all other components of a potential remedy, as required by statute and Executive Order 12580.

Two situations commonly occur in which ICs play an important role: (1) to protect the integrity of an engineering control intended to contain contamination, reduce its mobility, and minimize exposure, such as a landfill cap; and (2) to limit the exposure of individuals to residual contamination by limiting the reuse activities associated with that portion of the installation. For a remedy that leaves waste in place or does not allow for unrestricted use, five-year reviews are required to evaluate continued protectiveness, including the effectiveness of ICs.

Implementation of institutional controls can vary significantly depending on the type of property involved. At active installations, the ICs can be incorporated into installation master planning documentation by civil engineering or other installation management personnel where appropriate. For off-base property or BRAC installations (where property is transferred to a new user), other mechanisms are employed, such as deed restrictions. It is important to retain flexibility in implementing ICs. DoD has issued "A Guide to Establishing Institutional Controls at Closing Military Installations" (February 1998) that describes an approach in which various tools (such as permits and zoning) are used to implement and accomplish the goals and objectives of the ICs.

The USEPA and DoD have separately developed guidance for the use of ICs at active installations and BRAC installations. The DoD Components are developing management, implementation and documentation guidance for ICs. In addition, states are also addressing some aspects of ICs such as monitoring and enforcement through state laws and regulations. This is an evolving area. It will be critical for the environmental restoration team to integrate the applicable guidance into the ongoing response action process.

8.2 Remedy Performance and Optimization

The RA-O and LTM phases offer significant opportunity to optimize remedy performance through ongoing reviews of the two phases. For many sites, no LTM is expected to be necessary, whereas more complex sites may require both long-term RA-O and LTM. Since LTM may not always be required, emphasis should be placed on optimization of the RA-O remedy performance as early in the process as possible, and as cleanup progresses. Significant cost savings may be achievable through an aggressive RA-O optimization effort.

LTM programs are intended to track contamination in various media including surface water, ground water, soil, and sediment. They are an essential part of the environmental restoration process where waste remains in place. LTM programs are commonly designed to run for long periods of time, and in some cases may need to be undertaken indefinitely (e.g., at landfills or other sites with waste left in place). The effort and cost associated with this monitoring can, in the aggregate, represent a very substantial investment on the part of the DoD. For this reason, it is vital that RA-O and LTM programs be examined closely and be revisited periodically to identify opportunities for optimization through performance reviews.

Recent guidance (e.g., the Air Force Center for Environmental Excellence (AFCEE) *Long-Term Monitoring Optimization Guide*) advocates establishment of an ongoing LTM optimization program to maintain maximum monitoring effectiveness. This guidance is currently being broadened for applicability to an RA-O optimization program. In addition, EPA guidance on data quality objectives (DQOs) should be used in the development of the RA-O and LTM programs.

To ensure optimum efficiency of remedy performance, the RA-O and LTM programs should be reviewed and updated periodically using optimization guidance principles. Every program is unique and the optimization process must be tailored to the installation's specific conditions and needs. Five-Year Reviews offer a convenient vehicle for optimization; however, this process should be ongoing rather than just at five-year intervals. If the evaluation team discovers during the optimization process that the remedy performance program is inadequately designed and inefficient in meeting program objectives, modifications may be required. Such modifications may have immediate costs, but they may avoid the potentially greater costs of collecting and processing irrelevant data.

An EPA Superfund reform initiative (**"Superfund Reforms: Updating Remedy Decisions," Directive # 9200.0-22**) encourages lead agencies to take a close look at, and modify as appropriate, past remedy decisions where those decisions are substantially out of date with the current state of knowledge in remediation science and technology, and thus are not as effective from a technical or cost perspective as they could be.

Modification of RODs generally is appropriate where significant new information has become available that substantially supports the need to alter the remedy. This approach is in keeping with the general expectation that updates will be based on program experience and new scientific information. Remedy updates will generally consist of three principal types, which are listed below.

- Changes in the remediation technology employed, where a different technology would result in a more effective or efficient cleanup;
- Modification of the remediation objectives due to physical limitations posed by site conditions or the nature of the contamination; and

- Modification of the monitoring program to reduce sampling, analysis, and reporting requirements, where appropriate.

Refer to EPA Directive #9200.0-22 for more information on remedy updates. It should be reiterated at this point that much of EPA's current guidance is phrased in terminology aimed at fund-lead or PRP sites, rather than Federal facilities. Therefore, it is important to exercise care in the application and usage of EPA's terminology in the context of a DoD facility's environmental restoration program.

The remedy update process may consist of three phases: 1) identification and prioritization of RODs for review (which may occur during the Five-Year Review process); 2) technical review (to determine whether changes to the remedy are warranted); and 3) implementation of the remedy update (changes documented in the post-ROD file, an Explanation of Significant Differences, or a ROD Amendment; or where the remedy selected in the ROD is not altered, by revision of a work plan or other relevant document). Community preferences are particularly important regarding any proposed changes to the remedy. Communities must be involved in the remedy update process and should be provided an opportunity for public comment whenever the change will result in a ROD amendment.

States also play a role in the modification of remedy decisions. CERCLA §§ 120 (f) and 121(f) and 10 USC § 2705(a) and (b) provide that the states be given the opportunity to review and comment on specified steps in remedy selection. A tribe that is Federally-recognized, has a governing body that is currently performing governmental functions regarding environmental protection, and has jurisdiction over a CERCLA site, can be treated substantially the same as states under CERCLA §104 (see NCP § 300.515).

8.3 Data and Records Management

CERCLA, the NCP, and Executive Order 12580 require the development and maintenance of an Administrative Record when conducting environmental restoration activities at DoD installations. The primary purpose of this record is to document the decision process used in selecting the remedy or remedies for a particular installation, and to provide a lasting record supporting the decisions made for the site.

Closeout of environmental restoration activities requires consideration of applicable data and records management requirements, including not just those under CERCLA and RCRA, but also the Federal records maintenance and disposition requirements under other Federal statutes. This is an area that needs further attention and consideration of how to most effectively maintain environmental restoration information, particularly over time.

Guidance is not only needed to address management of administrative records, but also general restoration information repositories. An integrated approach with common terminology is needed to address overall management of the information that supports the environmental restoration program. Such an approach would support informed decision-making during the post-RIP period, promote creation of systems for efficient and effective information handling, and minimize efforts required to progress through the site closeout process. Support information should include both data (e.g., chemical sampling to evaluate remedy effectiveness during RA-O and remedy protectiveness during LTM) and records (documentation that supports overall environmental restoration program management and decision-making).

8.4 CERCLA Natural Resource Injury and Damage Assessments

Under CERCLA, DoD is a "trustee" on behalf of the public for natural resources in connection with natural resources that it owns or controls. DoD may also be a potentially responsible party liable to address and/or compensate for natural resource injury at its own and third-party sites. Lead agencies are required under CERCLA § 104(b)(2) and implementing provisions of the NCP "to promptly notify appropriate federal and

state natural resource trustees of potential damages to natural resources resulting from releases under investigation pursuant to this section and shall seek to coordinate the assessments, investigations, and planning under this section with such federal and state trustees.” (See also 40 CFR § 300.430(b)(7) and Subpart G.) At some installations, environmental contamination and/or the associated remedy may injure natural resources. Natural resource injury refers to harm, and more specifically a measurable adverse change in a natural resource caused by the release or threatened release of a hazardous substance. Natural resource damages, on the other hand, refer to (among other things) the compensation that may be sought by a natural resource trustee for injury to natural resources.

In accordance with the *DERP Management Guidance*, DoD Components should evaluate risk to ecosystems presented by contamination at component installations. In selecting a remedy at component installations, the impact on ecological receptors of the contamination and of restoration activities should be considered and, where appropriate, a plan for restoration or rehabilitation of injured natural resources should be carried out (40 CFR 300.615). The restoration project team at component installations should coordinate with appropriate other Federal and State natural resource trustees and, where appropriate, Indian tribes, to perform natural resource injury assessments.

At NPL or federal facilities, natural resource damage claims must be filed within three years after completion of the remedial action. With many remedies expected to last for 20–30 years or more, there remains a significant period of exposure to such damage claims.

DoD anticipates developing policy and guidance on natural resource injury and damage assessments.