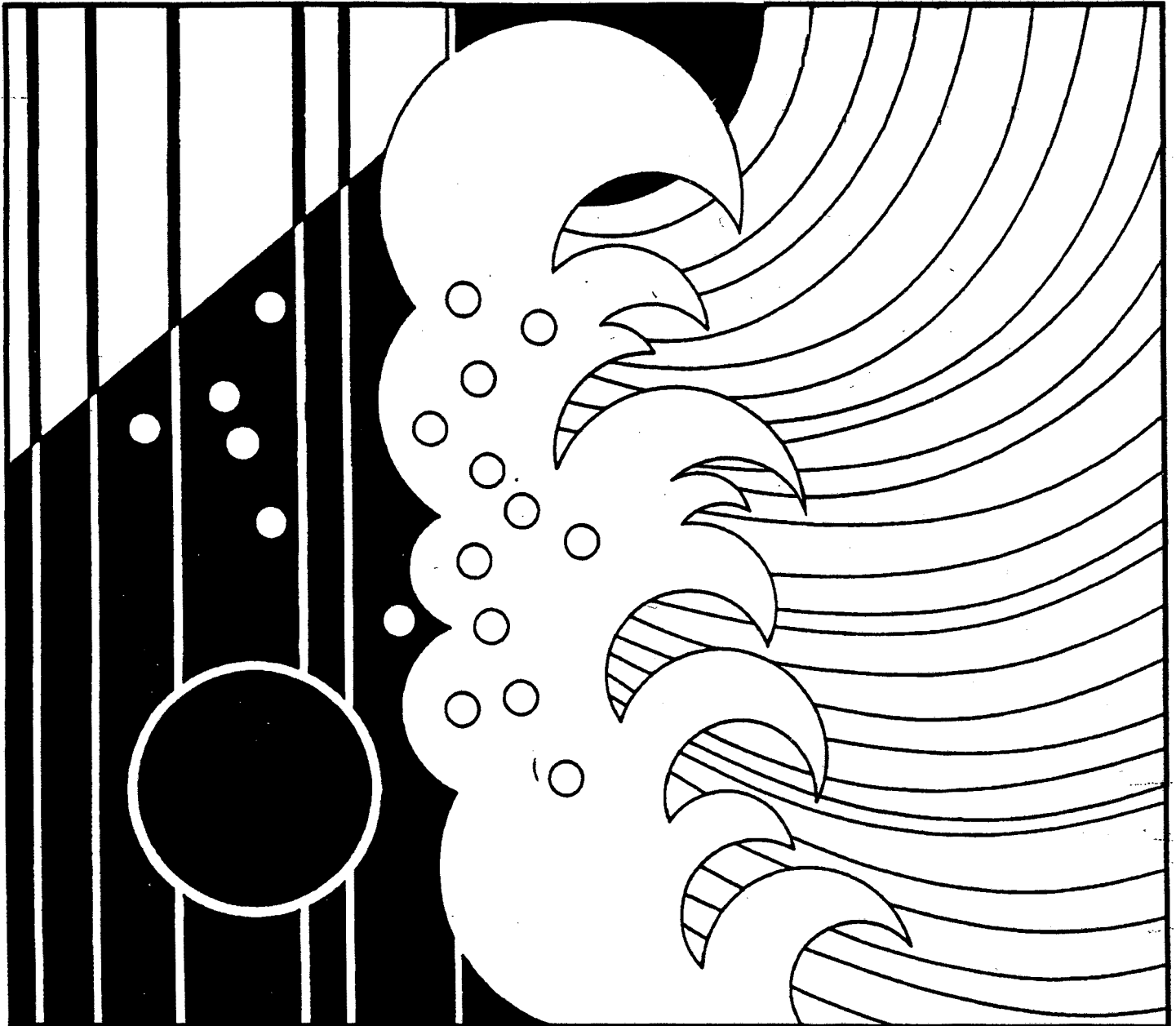




# Northwest RCRA Corrective Action Strategy



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## **INTRODUCTION**

### **Purpose of Strategy**

The passage of the 1984 Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) provided statutory authority to the U.S. Environmental Protection Agency (EPA) to compel appropriate corrective action at RCRA-regulated hazardous waste facilities. Corrective action requires the investigation and clean-up of contamination at or from a facility, including releases from past disposal practices. Since that time, the Northwest RCRA Program has taken a progressive approach to protecting and restoring its environmental resources through aggressive corrective action activities. While previously known as a "cradle to grave" program, RCRA now extends "beyond the grave." Corrective action investigations have been initiated at more than 70 facilities in the Northwest<sup>1</sup>. In working with the facilities to develop effective corrective action programs through permitting and/or enforcement, the Northwest RCRA Program has developed significant experience with many issues attendant to the investigation and clean-up of contaminated sites.

The Northwest RCRA Program includes the states of Alaska, Idaho, Oregon, and Washington and EPA Region 10. This strategy delineates the collective EPA/State principles guiding the Northwest Corrective Action program and major corrective action decisions such as prioritization of the investigation and clean-up of RCRA facilities and identification of clean-up standards. The primary principle guiding the Northwest Corrective Action program is to address the "worst case first" based on the priority ranking scheme described in this document.

### **Background**

#### **Magnitude of Corrective Action Needs in the Northwest**

In 1990, there were approximately 160 known RCRA-regulated treatment, storage and land disposal facilities (TSDFs) in the Northwest. Each facility is anticipated to contain several solid waste management units (SWMUs), resulting in a total number of SWMUs in the thousands. The RCRA-regulated TSDF universe will continue to grow as more facilities are discovered during routine inspections or through complaints. Furthermore, the implementation of the Toxicity Characteristic Rule (published in the Federal Register on March 29, 1990) -- which significantly expands the definition of hazardous waste -- could double the number of regulated facilities. More facilities are expected to enter the universe with future federal rules (e.g., wood treating regulations as well as independent state authorities which enlarge the State RCRA programs). Corrective action activities may need to be initiated at 80% of these facilities<sup>2</sup>.

EPA estimates costs for clean-up actions at the existing RCRA-regulated TSDF universe to be as high as 10 billion dollars nation-wide. Given current funding levels, EPA estimates that it will take 20 to 50 years to complete corrective action activities for the known existing universe<sup>3</sup>. Thus the Northwest RCRA Program could potentially equal or exceed the magnitude of

<sup>1</sup>From the HWMDS data base

<sup>2</sup>From the draft RCRA Implementation Study (April, 1990)

the Northwest Superfund program in terms of clean-up activities at hazardous waste sites. Yet, the resources devoted to implementing corrective action at RCRA-regulated facilities are significantly less than the resources devoted to the Superfund program. Nevertheless, expectations are high both from the public, which wants to see rapid progress on clean-up, and from Congress, which is likely to closely scrutinize the corrective action program when debating RCRA reauthorization.

#### Balancing Prevention and Clean-Up

Corrective action is one aspect of a multi-faceted hazardous waste program. A balance must be made between the need to maintain a strong preventive program to avoid future environmental problems (e.g. waste minimization, permit issuance, compliance monitoring and enforcement) and the need to clean up the results of mismanagement, particularly when it presents a threat to human health and the environment.

The core RCRA program is a prevention program intended to minimize the need for future corrective action. Weakening the prevention program to finance clean-up problems would be short-sighted. The balance between the prevention and corrective action programs must be considered in all major planning and budgetary decisions in the RCRA program. The scope of this strategy is limited to the corrective action portion of the Northwest RCRA program.

<sup>3</sup>From "Dingell Ground Water Monitoring Hearing Responses to Follow-Up Questions" (8/16/89)

## RECOMMENDATIONS

### The Corrective Action Process (pages 7-9)

- \* Streamline the corrective action process wherever possible, e.g., conduct several steps simultaneously or abbreviate certain steps. Specific ideas on how to streamline the process are presented in the section entitled "Corrective Action Process."
- \* Review the entire facility at some point in the corrective action process to assure that eventually the entire facility will be addressed for corrective action. This step is usually conducted as part of the RCRA Facility Assessment early in the corrective action process.
- \* If an enforcement order is issued exclusively for an expedited investigation or interim measures implementation, ensure that the entire facility is subsequently addressed through an amended order, separate order or permit.
- \* Develop a model enforcement order for RFI/interim measures that ensures that, where applicable, 40 CFR Part 270 information requirements are considered in the process of finalizing the enforcement order.
- \* Where appropriate, issue corrective action enforcement orders with the performance and clean-up standards explicitly stated (as opposed to the current practice of detailing each step of the corrective action measures implementation in the order).

### Prioritization of Facilities for Corrective Action (page 10)

- \* During the annual State/EPA Agreement process, review and update the environmental priority rankings and corrective action oversight rankings as new information becomes available. Highest priority facilities should be moved to the top of the list.

### Authorities for Initiating Corrective Action (pages 10-12)

- \* Use the following general guidelines when determining whether to use permitting or enforcement authorities to initiate corrective action.
  - Use enforcement authorities for uncooperative owners/operators, for corrective action activities requiring short term oversight and where prompt action is necessary.
  - Use the permitting process for cooperative owners/operators, for long term clean-up once the corrective action measures have been selected; and for characterization of sites needing active operating permits.
  - Authorities may be varied depending upon available resources and individual circumstances.

### Determining Size of Corrective Action Pipeline (page 12-14)

- \* Strive to achieve a "steady state" in the corrective action pipeline in terms of level of effort and allocation of resources. The level of effort and State/EPA resources spent on entering the corrective action pipeline through initiating investigations (RFIs) should approximately

equal the level of effort and resources exiting the pipeline, where final corrective action measures have been approved and are underway. Conducting RFAs and interim corrective action activities are considered outside the corrective action pipeline for the purposes of achieving "steady state."

- \* The goals listed below (which are based on the 1990 RCRA TSDF universe) are not State or EPA commitments. Commitments will be made during the SEA process.
  - Conduct RFAs on facilities identified in the 1990 RCRA TSDF universe by the end of 1992. Conduct RFAs on newly discovered facilities within one year of discovery.
  - Stabilize the risks presented by high priority sites through interim corrective action measures. Interim measures should be underway within 6 months after EPA/State discovers the contamination at sites where contamination could pose a significant risk to human health and the environment. Upon discovery of contamination, encourage owners/operators to immediately initiate their own environmentally sound measures to stop the contamination from spreading and to cleanup the existing contamination.
  - Initiate the necessary site investigations to determine extent of contamination (which provides the basis for developing interim and/or final corrective action measures) on all high priority facilities by the end of 1993.

#### Clean-up Standards (pages 15-17)

- \* Include clean-up standards published in Chapter 8 of the RFI Guidance in RCRA permits and enforcement orders (use the most recent IRIS numbers). Use detection limits if no health- or environment-based levels are available.
- \* Schedule lab, bench scale treatability studies and pilot programs in RCRA permits and enforcement orders.

#### Performance Standards (pages 18-19)

- \* Include system performance standards to determine the adequacy of clean-up in the permit or enforcement order. The following tests and information can be evaluated to determine if performance standards are being met: residual chemicals in the soil, water and air; mass balance; toxicity tests; and mobility tests.
- \* Participate in EPA HQ's development of policy or guidance to standardize procedures for determining clean-up adequacy.

#### Corrective Action Oversight (pages 20-22)

- \* Use the facility environmental priority ranking scheme (see Appendix 1) and accompanying guidelines to determine what level of oversight should be used for each facility in the RCRA TSDF universe.

#### Use of Owner/Operator Initiated Corrective Action (pages 23-24)

- \* Prepare and make available to the regulated community a package which would include:
  - A summary of the owner/operator-initiated corrective action program, including some discussion on performance standards.
  - A list of the most current guidance, policies, and regulations on corrective action, which if followed should reduce the likelihood that field or lab work will need to be repeated or exceeded.
- \* Investigate whether a formal policy is needed on type and level of EPA/State oversight for owner/operator-initiated corrective action.
- \* Explore types of incentives to encourage the regulated community to initiate corrective action.

#### Corrective Action at Federal Facilities (pages 25-27)

- \* When an Inter-Agency Agreement is being negotiated at Superfund National Priority List sites, EPA/State must assure that the roles of RCRA and CERCLA are clearly states in the IAG and that all RCRA regulated units and SWMUs of concern are addressed under either RCRA or Superfund.
- \* The level of corrective action oversight by RCRA staff should be determined during the IAG process. RFAs should be conducted prior to IAG negotiations.

#### EPA/State Partnership(pages 28-29)

- \* The following items should be discussed during the quarterly compliance meetings and agreements should be documented:
  - EPA/State corrective action responsibilities at each facility to be addressed during that year, including degree of EPA oversight over each facility and over the State;
  - Permitting process or the enforcement process to use during the various stages of the corrective action process; and
  - Corrective action reporting requirements.
- \* Additionally, during the quarterly compliance meetings, EPA and the State should reach agreement on which authority will be used to drive the clean-up process at each facility during that year (also known as the "Sites Agreement.") Most existing facilities will conduct corrective action activities under RCRA authorities (federal or authorized State); however, newly discovered facilities (i.e., illegal TSDFs) may be allowed to conduct clean-up activities under other State authorities and mechanisms as long as these mechanisms meet substantive RCRA requirements. Substantive "base" RCRA program requirements for regulated units include -- at minimum -- applicable ground water monitoring, financial assurance and closure/post-closure requirements.
- \* Regardless of the authority used to compel corrective action, use proposed 40 CFR Part 264 Subpart S rules (as guidance until they become final) to determine substantive RCRA requirements for corrective action.

Financial Assurance (pages 30-31)

- \* Use October 24, 1986 proposed rule on corrective action financial assurance as general guidance.
- \* Require a financial demonstration within a certain period of time from the effective date of order, issuance date of the permit and/or date of corrective action remedy selection. For companies with unique situations, use a flexible case-by-case basis such as a financial demonstration after each step of the corrective action process (i.e., just prior to RFI, before the CMS, etc.).
- \* Use flexibility with respect to the pay-in period for trust funds for closing economically marginal facilities which did not establish financial assurance during their operating lives.
- \* Financial assurance requirements should cover corrective action activities beyond the facility boundary.
- \* If the owner/operator cannot provide an adequate demonstration of financial assurance, then the owner/operator should be considered in compliance with financial assurance requirements if the State assumes legal responsibility for compliance or assures that funds will be available.

Resources for Corrective Action (pages 32-34)

- \* Concentrate efforts on stretching corrective action resources to assure that at least the most environmentally significant facilities are addressed. Pursue use of the following corrective action funding mechanisms: (1) State access to EPA contract funds to conduct corrective action activities; (2) use of Federal Superfund resources to conduct certain RCRA corrective action activities such as RFAs; (3) redirection of contractor funds to State grants; and (4) where applicable, use RCRA 3013 or CERCLA 104 or 106 to reimburse or recover EPA's oversight costs.

Building State and Regional Capability (pages 35-37)

- \* Assemble a Northwest Corrective Action Implementation Workgroup to administer special corrective action projects such as those discussed in this Strategy. The Workgroup should be the focal point for monitoring ongoing corrective action implementation issues in the Northwest.
- \* Continually seek and obtain appropriate training for RCRA staff and managers.
- \* Publish a quarterly RCRA newsletter which would include the Northwest RCRA Program's corrective action activities.



### **THE CORRECTIVE ACTION PROCESS**

Over the past few years, the Northwest RCRA Program has gained much experience in the process of corrective action. Limited corrective action resources have been stretched by placing the burden of achieving cleanup on facilities, while the federal and state environmental agencies focus their efforts on overseeing the corrective action process.

The goal of the corrective action process is to protect human health and the environment. The problem is initially defined by characterizing the nature and extent of releases of concern to soil, air, surface water and/or ground water at a site. Then a solution which will prevent exposure and/or clean up the releases is developed.

#### **The Phases of Corrective Action**

The four phases of the corrective action process are described below:

**Phase 1 RCRA Facility Assessment (RFA)**  
EPA/State identifies all solid waste management units (SWMUs)<sup>1</sup> and areas of concern where releases may have occurred based on information received by the facility, and review of aerial photographs, property history and other EPA/State files (see RFA Guidance for a comprehensive list). EPA/State reevaluates the environmental priority ranking based on information from the RFA. The facility must make a good faith effort to supply the information on all past practices based on facility records and employee interviews. Where appropriate, EPA/State should allow the facility to review the draft RFA report to assure that the information is accurate (and/or undertake additional investigations on uncertain SWMUs or releases) prior to entering the RFI stage.

**Phase 2 RCRA Facility Investigation (RFI)**  
The facility characterizes the nature and extent of any soil, air, surface water and/or ground water contamination from SWMUs and other areas of concern. EPA/State accepts, modifies and accepts, or rejects the RFI workplan. Then EPA/State evaluates the RFI results to determine if the site is adequately characterized. RFIs can either address all SWMUs or use a phased approach where the worst SWMUs are addressed first.

**Exposure Information Report (EIR)**  
The facility identifies nearest populations and any sensitive biological receptors through a literature search, field investigations, other agencies' records, and short term toxicity tests, or other lab tests or bioassays, as requested by the EPA/State. EPA/State evaluates the EIR to determine if the potentially exposed population of the site has been adequately characterized.

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<sup>1</sup> Proposed Subpart S Rule

Based on the RFI and EIR, EPA/State reevaluates the environmental priority ranking for further action and decides whether to require interim corrective action measures.

**Phase 3      Corrective Measures Study (CMS)**

The facility develops a plan for cleaning up the soil and ground water contamination. EPA/State accepts, modifies and accepts, or rejects the plan, and develops the performance standards for cleaning up the site.

**Phase 4      Corrective Measures Implementation (CMI)**

The facility cleans-up the contamination and conducts confirmative sampling. EPA/State monitors the process and determines whether the facility is meeting the performance standards.

At each phase of the corrective action process, the following items should be evaluated by EPA or the State:

- (1) Whether the site is adequately characterized or if further study is needed;
- (2) Determination of the environmental priority ranking for that next action when further action is needed;
- (3) How to involve the public; and
- (4) Whether interim corrective action measures are necessary and what type of measures to use.

It is important that the EPA/State, the facility, and the public are comfortable with the level of information on which decisions are made, and with the level of protection that a solution provides.

**Recommendation: Streamlining the Corrective Action Process**

The corrective action process as outlined is one approach to achieving the goals of site characterization and clean-up. The steps of the corrective action process may be streamlined in a number of cases or the corrective action process may proceed more quickly in one area of a facility than in another. This may occur at large sites, or at sites where interim measures are appropriate. Investigations may be iterative (especially the characterization of ground water contamination). RFIs and corrective measures can be conducted simultaneously at a site. In some cases, where a solution is obvious to all parties, a CMS may be minimal. At other sites, interim corrective measures may be necessary before the EPA/State has completed the RFA or the facility has completed the RFI. In other cases, the EPA/State may require the facility to proceed with a full scale RFI before the RFA is completed and/or the EPA/State may revisit the RFA after the RFI is finished. It is important that the EPA/State take steps to proceed in a timely fashion to define the problem and the solutions.

**Recommendation: Addressing the Entire Facility**

It is imperative that EPA/State reviews the entire site at some point in

the corrective action process. If an enforcement order is issued for an expedited investigation or for interim measures implementation, then EPA/State must still conduct an RFA to assure that the entire facility is addressed through an amended order, separate order or permit. If an enforcement order is issued exclusively for an expedited investigation or interim measures implementation, ensure that the entire facility is subsequently addressed through an amended order, separate order or permit.

It is recommended that a model enforcement order for RFI/interim measures be developed that ensures assure that, where applicable, 40 CFR Part 270 information requirements are considered in the process of finalizing the enforcement order. the entire facility is addressed.

Recommendation: Standard Condition in Order for Performance and Cleanup Standards

For certain facilities, EPA/State should be able to issue corrective action enforcement orders where the performance standards and cleanup levels are explicitly stated, as opposed to detailing each step of the corrective action measures implementation in the order. This would result in significantly reduce EPA/State oversight of corrective action order implementation, while assuring that the facilities are being cleaned-up sufficiently to protect public health and the environment. Therefore, more facilities will be able to enter the corrective action pipeline without a major additional resource burden on EPA/State. Additionally, this would encourage the facilities to develop innovative and cost-effective cleanup technologies.

## **DEFINING AND MANAGING THE CORRECTIVE ACTION PIPELINE**

### **Prioritization of Facilities for the CA Pipeline**

The Northwest RCRA program has developed a priority ranking scheme to assure that the most environmentally significant facilities are addressed first. Rating the environmental significance for a particular facility is determined by examining these major categories: 1) extent of contamination; 2) toxicity of waste stream(s); and 3) facility location with respect to potential of receptor exposure. In addition, the following categories are also considered: 4) enforcement history; 5) facility's financial status; 6) extent to which the nature of releases are known; 7) level of public interest; 8) complexity of the cleanup; and 9) capability of the facility to conduct cleanup activities.

An environmental priority ranking system has been created to prioritize facilities for RCRA corrective action activities. In the ranking system, each facility is a given numerical score which reflects its environmental priority. Using the criteria provided in Appendix 1 as a general guideline, those facilities receiving a score higher than 28 points are classified as high priority; those facilities scoring between 17 and 27 points are classified as medium priority and those facilities receiving scores 16 points and below are classified as low priority.

However, for prioritization of State and EPA RCRA corrective action workloads, other factors may also be considered such as facilities where corrective action has already been initiated; statutory deadlines; facilities where State or EPA Superfund activities are already underway at the facility; magnitude of contamination; and unique state and regional concerns. RCRA facilities where other programs are taking the lead for cleanup activities usually will not be ranked for the purpose of RCRA corrective action (see "Corrective Action Implementation at Federal Facilities" for the discussion on RCRA facilities on Superfund's National Priority List). Therefore, the final environmental priority ranking should be determined by EPA and the State during the annual SEA process.

#### **Recommendation: Where Prioritization Takes Place**

As more information becomes available, the environmental priority ranking for the facilities will be reviewed and updated during the SEA process. The ranking criteria shown on Appendix 1 should be used to assure that the highest scoring facilities are given priority attention. The environmental priority ranking process is not intended to cause major resource moves or grant equations within the Northwest States or EPA.

### **Managing the Corrective Action Pipeline**

#### **Use of Permitting vs Enforcement Authorities**

Three vehicles can be used to initiate corrective action: the permitting process, an enforcement order or owner/operator initiated corrective action. Owner/operator initiated corrective action is discussed under "Owner/Operator Initiated Corrective Action" The question as to whether

to employ compliance or permitting authorities and resources to initiate corrective action can be complex. The following discussion cites federal authorities. It is understood that the states may have alternative authorities at their disposal. For purposes of this document, enforcement authority refers to 3008(h) orders and permitting authority refers to the provisions of 3004(u) of HSWA. In addition, EPA can use RCRA 3007, 3013 and CERCLA authorities, where appropriate, to initiate corrective actions.

All permits, including post-closure permits must address corrective action. Post closure permits are required for any landfill, waste pile, surface impoundment or land treatment unit which received waste after July 26, 1982, or which ceased the receipt of wastes prior to that date but did not certify clean closure until after January 26, 1983. A post-closure permit is not required if a unit clean closes by removal in accordance with the 40 CFR Part 264 requirements and demonstrates equivalency pursuant to 270.(c)(5).

#### Land Disposal Facilities

A majority of the land disposal facilities in the Northwest have been issued RCRA permits or have ceased land disposal operations. Any new land disposal facilities must be permitted prior to operation. Illegally operating facilities must cease their land disposal operations and should be generally be handled initially under an enforcement order for closure of the regulated units, site characterization, and interim measures, as appropriate. Alternatively, closure and corrective action may be initiated through the permitting process. Permits should be issued for post closure care and long term closure after a site has been characterized and/or corrective action measures have been selected.

#### Operating Treatment and Storage Facilities (TSFs)

Operating storage and treatment facilities (TSFs) will eventually receive permits, through which corrective action will be initiated as necessary. However, interim status TSFs are also subject to 3008(h) authority, and this authority may be used prior to the permit issuance, if appropriate.

#### Closing Treatment and Storage Facilities (TSFs)

If a determination has been made that there has been or is a release of hazardous waste or hazardous constituents into the environment from a closing TSDF, then a Section 3008(h) order may be issued if that facility is currently under interim status, once had interim status, or should have had interim status.

Post-closure permits are not required for regulated units which clean close (40 CFR Part 264), and therefore a RCRA Facility Assessment (RFA) must be completed and a 3008(h) order issued (if necessary) prior to termination of interim status.

#### Where Use of Permitting or Compliance Authorities is Applicable

In many cases, both the compliance or permitting authority may be applicable to the site, and a choice must be made as to which to use for initiation of corrective action (e.g., interim status land disposal facilities

subject to the post-closure care requirements). It should be noted that under current regulations, post-closure permits are required even where a facility has closed under interim status and an order has been issued to address corrective action unless the facility has clean-closed by removal in accordance with 40 CFR Part 264 standards and demonstrates equivalency pursuant to 270.(c)(5). The order provisions could be incorporated into the post-closure permit, as appropriate.

The following items should be considered when both enforcement and permitting authorities are applicable at closing facilities:

**The Cooperation of the Owner/Operator**

Recalcitrant owner/operators may be more responsive to an order, particularly a unilateral order, although appeals may be time-consuming. Cooperative owner/operators may respond well to the post-closure permit process.

**Projected Length for Regulatory Oversight**

In general, enforcement authorities are less well-suited for activities requiring long-term oversight, whereas permits are designed to address long-term activities.

**Timing of Corrective Activity**

An enforcement order may be more appropriate where a prompt action is necessary and where a post-closure permit is not scheduled to be issued in the near future.

**Issuance of Permits**

In general, a permit should be issued when the corrective action measure is ready for implementation.

In addition to the above items, a very important consideration is resource management. To expedite the initiation of corrective action, permitting and enforcement resources must be weighed on a site-by-site basis. Where both authorities exist, it may be determined that an enforcement action would be most expedient, to be followed later by a post-closure permit (remembering that the order will not obviate the requirement for a permit, unless closure by removal has occurred). In some situations, workloads may preclude the use of one or the other authorities in a timely manner.

Many facilities where corrective action is initiated through an order may eventually require permits. Therefore, any enforcement order which initiates a corrective action investigation should strive to meet the substantive requirements for site characterization, described in 40 CFR Part 270 regulations.

The Northwest states and EPA Region 10 ideally should work together in making these individual determinations, remembering that there is no

prescription for initiating corrective action when multiple authorities and resources exist.

#### Determining Size of Corrective Action Pipeline

The corrective action pipeline is defined as the corrective action activities which require major EPA/State effort. Specifically, facilities enter the corrective action pipeline when RCRA Facility Assessments are initiated and exit the pipeline when EPA and/or the State have approved the corrective action measures and the corrective action measures are underway. EPA/State will continue to oversee corrective actions which are underway; however these activities are considered "post-corrective action pipeline." Even when corrective measures are underway, a facility may re-enter the pipeline if further contamination is discovered or if the measures are found to be inadequate and require modification.

The Northwest RCRA program will strive to achieve a "steady state" in the corrective action pipeline with respect to level of effort and allocation of resources for all major corrective action activities. The level of effort and Agency resources spent on entering the corrective action pipeline through initiating investigations (RFIs) will be approximately equal to the level of effort and resources exiting the pipeline, where final corrective action measures have been approved and are underway. The exceptions to this goal are conducting RFAs and interim corrective action activities. These activities will be conducted within a reasonable time from date of discovery of the facility or of the contamination.

Specifically, the RCRA Northwest Program will strive to conduct the following activities:

- \* Conduct RFAs on facilities identified in the 1990 RCRA TSD universe by the end of 1992. Conduct RFAs on newly discovered facilities within one year of discovery.
- \* Stabilize the risks presented by all high priority sites through the implementation of appropriate interim corrective action measures. Interim corrective action measures should be underway within 6 months after EPA/State discovers the contamination at sites where contamination could pose a significant risk to human health and the environment. Upon discovery of contamination, EPA/State encourages owners/operators to initiate their own environmentally sound measures to stop the contamination from spreading and clean-up the existing contamination.
- \* Initiate site investigations to determine the extent of contamination (to provide the basis for developing interim and/or final corrective action measures) on all high priority facilities by the end of 1993.

Although not listed as a specific goal, the Northwest RCRA Program will continue to conduct corrective action activities on medium and low priority facilities.

The goals listed above are not State or EPA commitments. Commitments will be made during the quarterly compliance meetings, SEA process etc. Determining the number of corrective action activities which may be accomplished in a given year will depend on a variety of factors such as resources available, complexity of the site, and experience of the staff. Historical information, workload factors in the workload models and knowledge of the site will assist in selecting facilities and projecting the resources required to conduct the necessary corrective action activities.



### SETTING CLEANUP STANDARDS

The process of environmental monitoring and clean-up is not simple. All of the uncertainties associated with environmental sampling, analytical chemistry methodologies (including quality assurance and quality control), human health effects of exposures to substances environmentally available at a site, cost, time, human emotions and political imperatives conspire to prevent the accomplishment of this task.

Often facilities require some incentive (such as an enforcement order with a penalty) to conduct the hydrogeologic characterization, and the sampling and analysis necessary to accomplish this task. However, by the time the site is characterized to the satisfaction of all interested parties (which may include the facility, State, EPA, local agencies, Indian tribes, environmental groups, and the public), all parties are usually in agreement on a clean-up approach (including the scheduling of lab and pilot tests, clean-up goals and system performance standards.)

#### Recommendation: Clean-up Standards

The Northwest RCRA Program recommends using clean-up standards published in Chapter 8 of the RCRA Facility Investigation Guidance (Interim final, May 1989). These standards should be verified through the Integrated Risk Information System (IRIS) prior to use and should be evaluated against other environmental receptors. These standards are based on health or environmental levels which have undergone EPA peer review and use standard risk assumptions. In the near future, EPA-HQ will be updating the RFI Chapter 8 levels quarterly by applying the standard exposure assumptions to IRIS so that the most current values are readily available.

Clean-up standards for ground water are called "Ground Water Protection Standards." Clean-up standards for soil are called "Soil Clean-up Levels." The clean-up standard for naturally occurring chemicals (such as some metals) are established by EPA/State based on the quantifiable background levels. For chemicals not found in background, the clean-up standards are based on the following:

1. MCL- Maximum Contaminant Levels, established under the Safe Drinking Water Act (10 x MCL for soil)
2. RSD- Risk Specific Dose, carcinogenic potency factors set at the  $10^{-6}$  risk level
3. RfD- Reference Doses set at the  $10^{-6}$  risk level for chronic, non-carcinogenic health effects
4. WQC- Water Quality Criteria - Fresh water or marine water concentrations for acute or chronic exposure or for human exposure based on water and/or water and fish ingestion
5. Other state or local requirements or environmental standards identified or developed in the facility's Exposure Information Report
6. QDL, PQL, or MDL- The Quantifiable Detection Level, Practical Quantification Limit

or Method Detection Limit, based on SW 846 for the constituents if no health or environment based level is available, or if the health or environment based level is below the QDL.

The most conservative applicable environmental or health standard (based on RSD, Rfd, WQC, state or local requirements, or an environmental standard identified or developed in the Exposure Information Report) should be applied. The QDL is not a standard, but is the practical limit of detection using the standard analytical methods. The QDL should be used if no health- or environment- based level is available, or if the health- or environment- based level is below the QDL.

If the QDL is above the health-or environment-based standards, clean-up standards may be set for other constituents of the contamination. In creosote, for example, there are a few carcinogens with health-based standards below the QDL and other hazardous constituents without health-based standards. To be most conservative, the Ground Water Protection Standards and the Soil Clean-up Levels would be established at the QDL for all the constituents. Where multiple contaminants are found, the synergistic (combined) effects may be taken into account in setting more stringent standards. However, for the most part these effects are unknown, and the additive effects should be within the acceptable risk range ( $10^{-4}$  to  $10^{-7}$ ) unless the MCL or QDL is too high.

Other limits which should be evaluated for applicability include the National Ambient Air Quality Standards, TSCA requirements, and State or local regulations.

RCRA permits and enforcement orders should incorporate the clean-up standards described in the RCRA Facility Investigation Guidance and IRIS for clean-up of ground water and soil. The use of standardized exposure assumptions for ingestion of water and soil, and for inhalation of air streamlines the setting of clean-up levels and avoids an inconsistent and time consuming site-by-site risk assessment approach.

By setting clean-up standards and by scheduling implementation of lab and bench-scale treatability studies in the RCRA permits and enforcement orders instead of mandating which technologies must be used, the responsibility for developing innovative and cost-effective technologies belongs to the facilities responsible for the releases. Proper environmental assessment of the extent of the releases, containment to prevent further releases, and expedited clean-up of uncontained releases (usually off-site releases) is key to assuring effective clean-up. Owners/operators (perhaps with an eye toward the cost of equivalent Superfund clean-ups and toward future liabilities) generally have been willing to take on this responsibility, and to take a pro-active approach to innovative technologies.

This recommended approach is consistent with the draft Subpart S corrective action regulations, and with the present regulatory framework for alternate concentration limits (ACLs), clean-up levels, and clean closure.

Clean closure applies to regulated units (e.g., surface impoundments, waste piles and land disposal units). To be clean-closed, all hazardous waste -- including waste residues, contaminated subsoils, contaminated structures and equipment -- must be removed to levels that would not pose health risk. In evaluating soil clean-closure levels, the potential of contamination to migrate to ground/surface water and air must be considered. Clean closure allows the owner/operator to close the regulated unit with no post-closure monitoring or maintenance requirements. These same standards are used under the corrective action program.

Facilities have so far accepted the stringent clean-up standards because the EPA/State allows flexibility in use of technologies and in timing of the implementation to meet these standards. The facility is held responsible for the clean-up, and the regulatory agencies focus their efforts on determining whether the facility has adequately characterized the problem and on monitoring the corrective action progress. The facility makes the major decisions regarding which ground water pump-and-treat and/or containment activities to implement. The agencies review these decisions to assure that all agency concerns have been addressed and then accept, reject, or modify and accept the plans. Where best demonstrated available technology (BDAT) has not been developed to meet those standards, facilities are responsible for conducting lab and treatability studies.

**SETTING PERFORMANCE STANDARDS**

In addition to the clean-up standards, system performance standards are set. The system performance standards are designed to assure that in the course of conducting corrective activities, the facility does not cause unpermitted releases to the air, soil or water. For example, the ground water performance standard may require the facility to contain a ground water plume and demonstrate that the entire plume is being withdrawn (not spread) and cleaned up. The achievement of this performance standard is verified through monitoring of the chemicals and water levels in the ground water.

The facility is also responsible for conducting lab and pilot scale treatability studies, and developing an effective remedy. The EPA/State are responsible for monitoring the remedies and assuring that the remedies are protective of human health and the environment. The clean-up standards and system performance standards are contained in the RCRA permit or enforcement order.

Before the facility begins clean-up activities using a new technology, the facility must demonstrate through a lab or pilot program that the solution will be effective. Additionally, the facility must demonstrate that there will be no uncontrolled releases of concern in the field application.

The use of the following tests and evaluation procedures to monitor the lab scale pilot program or full scale remediation must be tailored to the clean-up technology proposed:

- o Chemical sampling and analysis of soil, sludge, water and air including quality assurance and quality control procedures (SW 846 and contract lab procedures).
- o Mass balance (based on chemical monitoring, carbon labeling, etc.) to determine how the chemicals dissipate (into the air, water, soil) and into what they degrade (substances which are more or less toxic).
- o Toxicity tests to determine the degree of residual toxicity after treatment of the soil and/or ground water (soil bioassays, acute and chronic toxicity tests, microtox, Ames test, short term toxicity tests).
- o Mobility (stability tests, freeze/thaw tests, EP toxicity tests, toxicity characteristic leaching procedure).
- o Water level monitoring to determine the influence of a groundwater pumping system.

Each of these tests has variables including cost, accuracy, reliability and reproducibility (quality assurance and quality control). These tests are currently the only established guidelines for determining the adequacy of the clean-up efforts.

**Recommendation: Setting Performance Standards**

Performance standards should be included in order or permit actions. The Northwest RCRA Program should use the currently available tests for determining the adequacy of the clean-up, and participate in EPA HQ's developments of policy or guidance to standardize procedure for determining clean-up adequacy.

## **CORRECTIVE ACTION OVERSIGHT**

### **Definition of Corrective Action Oversight**

As corrective action work progresses at RCRA facilities, the number of facilities requiring State, EPA or joint oversight (and concomitant costs) will continue to grow. The Northwest oversight philosophy must strike a balance between our (state and federal) responsibility as governmental agencies charged to protect the environment and the need to place an appropriate burden of responsibility and accountability on facility owners and operators. Due to limited governmental resources, oversight must be conducted in such a way that recognizes the need for varying levels of scrutiny based on factors such as the severity of environmental harm and characteristics (e.g., financial status, compliance history) of the owner/operator.

Corrective action oversight is defined as the various activities performed by the agency(ies) (Federal and/or State) relative to the corrective action process. Oversight activities include:

- \* Mandatory Agency requirements such as conducting RCRA Facility Assessments (RFAs), site inspections and Comprehensive Groundwater Monitoring Evaluations (CMEs) (where applicable); and
- \* Other activities depending on level of Agency oversight such as site visits, review of documents, preparation of comments, approvals or disapprovals of submittals, collection and analysis of split samples, negotiations, contract management including review of contractor documents, etc.

Some facilities may require a relatively small degree of oversight by the agency(ies) due to a relatively low environmental hazard from the types of wastes which are handled or from good waste management practices by the facility. Other facilities may deserve a maximum amount of oversight due to the complexity of the site and waste stream, a volatile enforcement history, high environmental hazard and/or poor past waste management practices.

Oversight activities can be performed by a variety of agency staff. It may be beneficial if the person preparing the permit and/or enforcement action can also be involved with the oversight activities. In this way he/she can gain the most information about the facility, and the enforcement action/permit will be effective by addressing the most pressing concerns. However, workload constraints may require that contractors do at least some of the oversight activities such as preparing RFAs and reviewing facility submittals. In the case where contractors are performing corrective action activities, EPA (and/or the State) still has the ultimate responsibility for the quality of contractor-generated products.

### **Recommendation: Determining Level of Corrective Action Oversight**

Two main steps are used in determining how much oversight a particular facility should receive. The first step is to rate the facility in terms of its environmental significance (see Appendix 1). That rating (high, medium or

low) from Step 1 (and described on page 11 "Prioritization of Facilities for the Corrective Action Pipeline") is then used to determine the amount of oversight. Generally, EPA/State will use a low level of oversight for facilities with low environmental hazard and a high level of oversight for facilities with high environmental hazard. For convenience, the level of oversight has been broken into three categories: High, Medium, and Low. Additional levels may be included if useful.

**High:** The facility receives attention by the agency(ies) on a continuous basis. Oversight activities may include:

- \* A close review of all documents submitted;
- \* Frequent site visits, particularly during site characterization studies, including appropriate inspections such as comprehensive groundwater monitoring evaluations (CMEs), operation and maintenance inspections (O & Ms), laboratory audits, and split sample events (sufficient amounts of split samples should be taken to assess the QA/QC performance of the facility);
- \* Close interaction between facility consultants, the owner/operators, and the agency(ies) during the evaluation of the clean-up alternatives.

This level is extremely resource-intensive, and would require nearly continual involvement by at least one EPA/State staff member. Workload estimates for this level of oversight range up to 0.5 FTE.

**Medium:** Oversight activities at this level could include:

- \* A complete review of all documents submitted to the agencies, but the field oversight activities are scaled back from high-level oversight;
- \* A review of the QA/QC performance of the sampling program performed by the facility, including split samples from a sufficient number of sampling events;
- \* Conducting a CME for ground water monitoring systems prior to granting any permits, or prior to the resolution of any enforcement actions.

With this level of oversight, EPA/State relies to a great extent on certification by an independent professional engineer or registered geologist that particular performance standards have been met, and that the data submitted is correct and representative. Workload estimates for this level of oversight range up to 0.25 FTE.

**Low:** This level is applied to facilities that either are a low priority for further action by EPA/State, or for facilities which are initiating their own cleanups and EPA/State does not have the resources to provide full oversight.

The Agency's role is to establish performance standards (e.g., clean-up goals) and verify that they have been achieved with

certification by an independent professional engineer or registered geologist. Corrective action is addressed through either formal or informal agreements between the owner/operator and the agency(ies). The owner/operator is required to periodically brief the agency(ies) on the progress of the corrective action, with the understanding that the agency(ies) would periodically review procedures, observe field activities, verify the analytical results, and/or check the progress of the remediation and the validity of the results.

Workload estimates for this level of oversight range up to 0.1 FTE.

As new information is received, the facility's ranking may be revised. Generally the determination of the environmental priority ranking and level of oversight will be determined during the SEA process.



## **OWNER/OPERATOR INITIATED CORRECTIVE ACTION**

### **Northwest Policy**

The Northwest RCRA Program encourages owners/operators to initiate corrective action. The faster facilities initiate clean-ups, the less likely that the contamination will worsen and become more difficult to clean up.

### **Responsibilities of the Owner/Operator**

The owner/operator must comply with all waste management laws, regulations and standards which are applicable to cleaning-up the release of hazardous constituents from its solid waste management units (SWMUs). The four principal standards which should set the standards for corrective measure selection and clean-up are: (1) protection of human health and the environment, (2) control of the sources of contamination in order to reduce or eliminate further releases of hazardous wastes or constituents, (3) attainment of media clean-up standards, and (4) compliance with waste management standards.

### **Advantages of Owner/Operator Initiated Corrective Action**

Some owners/operators will want to initiate corrective action prior to issuance of a RCRA permit or compliance order for various reasons. These reasons may include concern for problems worsening and becoming more difficult to cleanup over time; property transfer requirements; corporate or community image; and future liability concerns.

One advantage for the owners/operators to initiate corrective action is that the clean-up can be carried out on the owners/operators' time schedule, instead of being externally driven by a schedule of compliance with deadlines and stipulated penalties imposed for failure to submit documents or achieve milestones by fixed dates. Therefore, the owners/operators could potentially streamline the corrective action process. Nevertheless, certain types of corrective action activities, such as installation of a hazardous waste incinerator to treat contamination, may require a RCRA permit.

Owners/operators initiated corrective action is best suited for removals of contaminated wastes. The owners/operators will need to consider hazardous waste storage duration limitations in any removal efforts in order to avoid the potential violation of storing hazardous waste without a permit.

### **Responsibilities of Owner/Operator Initiated Corrective Action**

Even when initiating corrective action on its own, the owners/operators are obligated to notify governmental agencies in certain situations. The owners/operators should notify EPA (or State agency where required), nearby property owners and residents if the ground water and/or air action levels are exceeded. State and local regulations vary regarding notification and/or permit requirement requirements for clean-up activities. Frequently, programs

in addition to RCRA are involved. The owners/operators must include a notification of residual contamination in the property deed. The owners/operators should maintain all data at the facility until EPA and the State are satisfied that the clean-up is complete.

In implementing corrective action on its own, the facility must recognize that there is an attendant risk that the EPA or the State will revisit the site with statutory and regulatory authorities to ensure that the site characterization and/or clean-up conditions satisfy those requirements. Additionally, new laws and regulations could require the owners/operators to conduct additional corrective action activities.

Thus owner/operator-initiated corrective action, as strongly encouraged as it is, does not necessarily obviate the need to coordinate further corrective action within a regulatory framework. It is possible that an interim corrective measure may be incompatible with a final corrective action measure selected or approved at a later date by the EPA or State. The use of sound scientific information and engineering design from the outset to characterize and cleanup the site should considerably reduce the risk of additional work requirements.

#### Recommendation: Guidance to Owners/Operators

The Northwest RCRA Program should develop and provide the regulated community with the following items:

- \* A fact sheet which summarizes options and expectations of owner/operator-initiated corrective action activities, including sections on clean-up levels and on performance standards.
- \* A list of current State and Federal regulations, guidance and policies on corrective action, which if followed would reduce the likelihood that facility-initiated work will need to be expanded or conducted differently.

#### Recommendation: Regulatory Agency Oversight

The Northwest RCRA Program will need to investigate whether a formal policy is needed on the type and level of EPA/State oversight required for owner/operator initiated corrective action. Until such time, the environmental priority ranking system should be used to determine the level of oversight.

#### Recommendation: Developing Incentives

The Northwest RCRA Program should explore incentives to encourage the regulated community to initiate corrective action such as federally-required public participation in major corrective action determinations; EPA and State commitments made through the SEA and STAR processes; increased media attention; and penalties for non-compliance with permit requirements and administrative orders, as well as potential criminal ramifications in certain circumstances.

## **CORRECTIVE ACTION IMPLEMENTATION AT FEDERAL FACILITIES**

### **The Unique Nature of Federal Facilities**

#### **The Federal Facility Universe in the Northwest**

Federal facilities are funded and managed by a department or agency of the Federal government. In the Northwest States, these facilities include Department of Defense bases, Department of Energy facilities, Department of Transportation, Department of Agriculture, and Federal Aviation Agency facilities. These facilities range in size from the small Department of Agriculture Yakima Agricultural Research Laboratory (which is about the size of a city block) to the Department of Energy mega-sites at Hanford and Idaho National Engineering Lab (INEL) which are nearly the size of small states.

Many Federal facilities, such as INEL and Hanford, contain multiple sites with a variety of wastes including low-level and high level radiation and mixed waste (i.e., hazardous waste with radioactive components). In the Northwest States, there are at least 26 Federal facilities which manage hazardous waste and have potential hazardous waste problems requiring cleanup.

#### **Differences Between Federal Facilities and Other Facilities**

Federal facilities differ from privately owned facilities in several significant ways. Unlike the private sector, Federal agencies cannot use earnings to fund their hazardous waste clean-up responsibilities. Congress plays a unique role in Federal facility clean-ups by authorizing funds for that purpose; therefore, compliance by Federal facilities with RCRA and Superfund are subject to Congressional appropriations. Additionally, Federal facilities are immune from Federal litigation except to the extent that sovereign immunity is specifically waived in legislation by Congress. The Department of Justice has determined that EPA may issue to Federal facilities and to contractor at government owned, contractor operated (GOCO) facilities Section 3008(h) corrective action orders or enforcement orders using 6001 authority but may not issue Section 3008(a) compliance orders. EPA can not now penalize Federal facilities for RCRA non-compliance; however, the States may have the ability to penalize Federal facilities.

#### **Difficulties of Conducting Corrective Action at Federal Facilities**

Conducting corrective action activities at Federal facilities is often complicated by overlapping jurisdiction among Federal programs, overlapping jurisdiction between EPA and States authorized for RCRA/HSWA and Superfund, and potential overlapping jurisdiction with other Federal laws such as the Atomic Energy Act and with other State and local hazardous waste related authorities. Another issue is whether to use CERCLA or RCRA as the primary vehicle to ensure clean-up when both statutes apply and how to use these statutes together. Some Federal facilities have funding available for CERCLA remedial activities but have no funding available for RCRA corrective action. If these issues are not resolved, then Federal facilities may experience major delays in the clean-ups which could result in worsening contamination, or the State and/or Federal agencies may undertake duplicative oversight activities.

### Statutory Authorities and Clean-Up

Federal facilities must comply with both RCRA and CERCLA. Section 6001 of RCRA expressly subjects Federal facilities to RCRA provisions and implementing regulations, including corrective action requirements. Section 120 of CERCLA states that Federal facilities are subject to CERCLA, including CERCLA's liability provisions. This section outlines the special requirements and timetables regarding Federal facilities.

### **Mechanisms for Clean-Up at Federal Facilities**

#### RCRA and CERCLA Overlap at FFs: The Use of IAGs

Often RCRA corrective action activities need to be conducted in coordination with CERCLA clean-up activities. Federal facilities that are placed on CERCLA's National Priority List (NPL) must sign an Interagency Agreement (IAG). EPA's policy is to have three party IAGs, with the State joining EPA and the Federal facility as an active partner and signatory. The three-party IAGs can address site-specific concerns and maximize State involvement in the clean-up process. IAGs provide a unique opportunity to integrate RCRA and CERCLA at Federal facility sites.

The IAG must include a review of cleanup alternatives considered and remedy selected, a schedule for clean-up accomplishments, the arrangements for operation and maintenance, and the specific responsibilities of CERCLA, RCRA, State, responsible Federal agency, and contractor staffs involved in the clean-up.

IAGs are enforceable by the parties to the agreement and by citizens and States using CERCLA Section 310 authority. RCRA authorities may be used for those installations that include both NPL sites and RCRA units. EPA may issue a 3008(h) order to drive the clean-up process if necessary.

#### DOD Installation Restoration Program

The Department of Defense (DOD) has initiated its own owner/operator initiated cleanup program, known as the Installation Restoration Program (IRP). Under this program, some of the military bases in the Northwest States have undergone extensive investigation to determine presence and extent of contamination at the bases.

Since the IRP was developed with CERCLA in mind, many of the studies performed under the IRP are of limited use for RCRA investigations. However, the IRP has developed a useful site characterization data base which can be utilized in RFAs and other corrective action activities.

Coordination between CERCLA and RCRA is essential for effective management of the more complex Federal facilities, especially in the development and implementation of IAGs. A newly formed Federal Facilities Superfund Branch in EPA Region 10 will better enable EPA to coordinate CERCLA and RCRA activities in the Northwest and handle the unique nature of these facilities.

Although EPA is the lead for a majority of the clean-up activities at

these facilities, State involvement is essential to assure that State-specific concerns are addressed as well as utilize the States' detailed knowledge of these facilities. The Northwest States will need to determine how to best coordinate activities between their RCRA- and Superfund-type programs. Much of the specifics on which program and agency will conduct which activities are detailed during the IAG process.

Recommendation: Level of RCRA Oversight at NPL Sites

The level of corrective action involvement by RCRA staff should be determined during the IAG process. It is encouraged that RFAs be conducted prior to IAG negotiations.

Recommendation: RCRA and IAG Negotiations

When an IAG is being negotiated at NPL sites, the EPA RCRA program and/or State RCRA program must assure that the roles of RCRA and CERCLA are clearly stated in the IAG and that all RCRA-regulated units and SWMUs of concern are being addressed under either RCRA or CERCLA.

### THE EPA/STATE PARTNERSHIP

In order to utilize resources efficiently and to minimize duplication of effort, EPA Region 10 and the Northwest States must have a clear understanding of their expected roles in the corrective action process. Until a State is authorized to implement the Federal corrective action regulations (promulgated pursuant to HSWA, including 40 CFR Part 264 Subpart S, once proposed and finalized), EPA has primary responsibility for corrective action permitting, enforcement and oversight. For States where EPA Region 10 has primary responsibility, EPA Region 10 may delegate the oversight responsibility for specific facilities to the States on a case-by-case basis.

When a State becomes authorized for corrective action under the RCRA program, then that State assumes primary responsibility for HSWA corrective action permitting. States are required to demonstrate corrective action permitting technical competence and procedural capabilities prior to receiving corrective action permitting authorization. EPA cannot delegate statutory enforcement authorities, although States may have or acquire similar authorities through State legislative initiatives.

Once a State is authorized or when a State oversees corrective action work conducted under federal authorities, EPA Region 10 is required to conduct oversight of that State's corrective action program. In EPA Region 10, the EPA Operations Offices (OOs) and the regional State Program Coordinators provide general program assistance and oversight. The EPA Seattle Region 10 office technical staff provide technical oversight of the States' corrective action program. Any issues on the EPA oversight of the States' corrective action program will be addressed through SEA process.

### **Corrective Action Authorities**

EPA Region 10 and the Northwest States will conduct RCRA corrective action work using a variety of different State and Federal authorities. Within EPA, clean-up activities are conducted using both CERCLA and RCRA. The authorities under which cleanup activities are conducted vary from State to State. Generally each State has a "RCRA" type authority, a "Superfund" type authority and a water quality authority which can be used to drive the clean-up process.

### Recommendation: State/EPA Roles and Responsibilities

As part of the annual workplan prepared during the grant and SEA process and during the quarterly compliance meetings, the State and EPA should discuss the following items for facilities being addressed during that year:

- \* Corrective action responsibilities at each site, including the degree of EPA oversight over each site and over the State during that year (the level of EPA oversight will depend on the complexity of the site, the available resources and the State's corrective action oversight capabilities);
- \* Permitting vs. enforcement route to use at each facility;

- \* Clean-up authorities to be used for each site (guidance on route selection is provided in the section "Defining and Managing the Corrective Action Pipeline"); and
- \* Corrective action reporting requirement, where the State reports to EPA on corrective action activities on a regular basis.

**Recommendation: Authorities to Use for Clean-up at RCRA Facilities**

During the SEA process and at quarterly compliance meetings, EPA and the State should reach agreement on which authorities will be used to drive the cleanup process at each facility during that year, including newly discovered facilities. Most known, existing facilities are expected to conduct corrective action activities using RCRA authorities (either Federal or authorized State analogs); however, newly discovered facilities (e.g., illegal TSDFs) and some existing facilities may conduct regulated clean closure and/or past practice clean-up activities under State authorities and mechanisms other than RCRA, as long as these mechanisms meet substantive RCRA requirements.

Regardless of the authority used to compel corrective action, the proposed 40 CFR Part 264 Subpart F rules should be used as guidance (until they become final) to determine substantive requirements for corrective action activities.

During the quarterly EPA/State compliance meetings, EPA and the State should reach agreement on how to handle newly discovered facilities. Specifically the State and EPA should address the following questions: Should the facility be handled using Federal or State authorities? Should the facility be listed in the RCRA TSDF universe; if so, when? The agreement on how to handle newly discovered facilities should be documented either in the SEA, in the Compliance Assurance Agreement, in a multi-year strategy or in another suitable location.

### FINANCIAL ASSURANCE FOR CORRECTIVE ACTION

Congress required that owners/operators demonstrate financial assurance for the costs of completing corrective action for both on-site and off-site releases from any solid waste management unit (including regulated units) at facilities requiring a RCRA permit. Congress enacted this provision because it was concerned that EPA or the States might issue RCRA permits that did not address all solid waste management units (SWMUs) at facilities, and Congress wanted to ensure that RCRA permits would not be issued to owners and operators of facilities who are financially unable to complete a necessary clean-up.

#### Recommendation: Overall Guidance

At the present time, the Northwest RCRA Program has some discretion as to how to implement financial assurance requirements for corrective action. The October 24, 1986 proposed rule on financial assurance for corrective action should be used as general guidance. Certain issues are not fully discussed in that guidance. These issues are listed below with recommended courses of action.

#### Recommendation: Mechanisms for Financial Assurance Demonstrations

For facilities which are not on the permit track or which will be permitted at a later date, EPA (or the State) can use the following mechanisms to assure that facilities will fulfill their financial responsibilities with respect to corrective action:

- RCRA Section 3008(h) or 7003 Corrective Action Order (or State equivalent)
- CERCLA enforcement authority (or State equivalent) to obtain funding from responsible parties where EPA (or the State) determines that RCRA authorities cannot assure adequate funding for corrective action

#### Recommendation: Timing of Financial Assurance Demonstration

A corrective action financial demonstration should be required within a specified time period after remedy selection. If information is received which substantially changes the corrective action program, the facility will need to provide another financial assurance demonstration. For facilities with unique situations, use of a more flexible demonstration process may be acceptable. For example, certain facilities may be required to provide a financial demonstration after each step of the corrective action process (i.e., just prior to RFI, before the CMS etc.). Flexibility should always depend on documented, verifiable financial limitations.

Although corrective action plans and measures should be included in the permit where a permit is required, this may not always be possible or feasible. Use flexibility of allowing permit issuance prior to owner/operator submittal of corrective action plans and engineering studies. The permit should contain schedules for complying with the corrective action financial assurance requirements. Once corrective action measures are developed and a financial demonstration can be made, the permit can be modified to include this information.



**Recommendation: Pay-In Period for Trust Fund**

To avoid the impact of financial assurance costs increasing the number of bankruptcies and the amount of unfunded corrective actions, use flexibility with respect to the pay-in period for trust funds for closing economically marginal facilities which did not establish financial assurance during their operating lives. The flexibility needs to be balanced against owners/operators which take advantage of EPA or the State and benefit economically from the use of flexibility. Therefore, use the approach outlined in the financial assurance corrective action proposed rule, with the flexibility of using a case-by-case approach when appropriate.

**Recommendation: Boundaries for Corrective Action**

On March 28, 1986, EPA proposed a rule which required that financial assurance requirements cover corrective action activities beyond the facility boundary. This rule has not been finalized; however use this proposed rule as guidance.

**Recommendation: State Assumption of Financial Responsibility**

The owner/operator should be considered in compliance with the financial responsibility if the State either assumes legal responsibility for an owner's/operator's compliance with corrective action requirements or assures that the funds will be available for corrective action. These actions would meet the goals of the financial responsibility requirements.

**Recommendation: Financially Marginal Closing Facilities**

Another major issue concerns how to assure that financially marginal owners/operators provide adequate financial coverage for corrective action activities for closing facilities. Using the threat of forced closure as an incentive would obviously not be effective for a closing facility. One possible method is to use civil or stipulated penalties to assure that the owner/operator does not economically benefit from non-compliance.

Owners/operators must provide information to assure that adequate finances are available to carry out corrective action activities. However, in some situations EPA/State may exercise enforcement discretion and enter into a settlement which does not explicitly direct full compliance with the financial assurance requirements (such as a more flexible schedule for meeting the requirements or use of an alternative financial assurance mechanism). This discretion should be limited to the following situations:

1. The owner/operator must demonstrate that it cannot meet the financial assurance requirements through any of the available mechanisms.
2. The owner/operator must agree to an expedited schedule for closing the facility.
3. The owner/operator must continue to make all practicable efforts to comply with the regulations.

### **CORRECTIVE ACTION PROGRAM RESOURCES**

Current resources are insufficient to complete all the corrective action activities which need to be done. The Northwest RCRA Program should continue to push for additional funding; however, acquiring sufficient resources to support the burgeoning Northwest Corrective Action Program is not a promising prospect in the short term. The process for securing innovative funding mechanisms is typically a difficult and time consuming process. Therefore, the Northwest RCRA Program should also concentrate its efforts on stretching the current corrective action resources to assure that at least the environmentally most significant facilities are addressed.

Described below are future national initiatives for corrective action resources, as well as recommendations for stretching currently available resources.

#### **Future Initiatives for Increasing Corrective Action Resources**

##### **Regulated Community Payment for Agency CA Oversight**

At this time, EPA cannot charge fees for any part of the RCRA program, and it is unlikely that the current administration will pursue legislative changes to provide authority for EPA to impose fees on all or part of the regulated public.

Some of the Northwest States are able to impose fees on all or part of the regulated public to fund parts of the RCRA program, such as charging a fee to process a RCRA permit application; however, in most cases, the list of activities covered by the fees are clearly limited by statute. Therefore, statutory changes may be required in order to allow the States to impose fees for oversight of clean-up activities.

##### **Owner/Operator Direct Payment to Contractors**

In order to add resources to the corrective action program, EPA-HQ is considering several options. First, EPA could require facilities to provide direct payment to EPA for the cost of EPA oversight or require the facilities to directly reimburse EPA when contractors have completed the oversight responsibilities. This is not a viable option at this time since all monies would be passed on to the U.S Treasury General Fund; therefore, EPA would need statutory authority (probably through RCRA Reauthorization) to increase RCRA authority to allow for direct cost recovery or an establishment of a RCRA Trust Fund. EPA-HQ is not actively pursuing this option at this time, although Congressional reauthorization of RCRA is pending (and overdue) in 1990.

As another option, EPA Region 10 and/or the Northwest States could require the owner/operator to directly pay for a contractor to conduct corrective action oversight. The contractor would be selected by the facility and approved by EPA and/or the State.

EPA's authority under Section 3008(h) of RCRA to order respondents to take actions necessary to protect human health and the environment may include the ability to hire an oversight contractor. That is, EPA under an

enforcement order such as Section 3008(h) or through a permit condition or the Northwest States under State authorities could stipulate penalties to require corrective action oversight. Additionally, EPA and the States could recommend that facilities conducting owner/operator initiated clean-ups include payment of State/EPA corrective action oversight as part of the consent agreement.

In the Northwest, the States are not legally able to unilaterally require the facility to pay contractor oversight costs at the present time. Like EPA, the States would require legislative or statutory changes. Using enforcement mechanisms such as a State version of the consent decree is a possibility; none of the Northwest States has used this mechanism at this date.

### **Corrective Action Resources to States**

Beginning in FY91, EPA Region 10 will be allocating grant money to each State specifically for RCRA corrective action activities. In order to qualify for these funds, the State must demonstrate that they are conducting activities relating to corrective action. When the State is able to make this demonstration, EPA Region 10 should try to provide resources such as grants, contractor support etc. The discussion below provides other ideas for providing corrective action resources to the States.

#### **Use of EPA Contractor Funds by State Personnel**

One method of supplementing State corrective action resources and encouraging States to participate fully in the corrective action program is to allow States to use EPA contract funds to conduct corrective action activities. Although EPA can not directly transfer such funds, EPA can allow the States input into contractor assignments, as well as review of contractor products.

#### **Redirection of Contractor Funds to State Grants**

To offset the States' resource burdens associated with corrective action activities and to provide an incentive to States to participate fully in the corrective action program, EPA-HQ is actively pursuing the conversion of extramural funds to State grants. The issue is not whether to convert these funds, but how to implement such a conversion. The amount of funds redirected would depend on the level of involvement in corrective action assumed by the States. EPA Region 10 prefers the option of State use of EPA contractor funds described above.

### **Doing More With Less: Stretching Current Resources**

#### **Recommendation: Tiered Approach to Corrective Action Oversight**

One method of stretching the resources is through the use of a tiered approach to corrective action oversight based on such factors as facility risk and compliance history. The corrective action oversight rating system described in "Corrective Action Oversight" provides the criteria to establish varying levels of corrective action oversight.

Recommendation: Use of Superfund Monies for RFAs

Through the Environmental Priorities Initiative, the RCRA Northwest program is supplementing RCRA corrective action resources by using Superfund resources to conduct RFAs. In 1990-91, the EPA Region 10 Superfund program has agreed to have its contractors conduct approximately 65 RFAs in the Northwest States. The Northwest RCRA Program could also investigate the possibility of tapping into the State Superfund programs to conduct some corrective action activities.

Experience has shown that in use of federal and State Superfund resources and contractors, the quality of the product is directly proportional to the involvement and oversight on the part of the RCRA staff members most familiar with the facility.

Recommendation: Enforcement Tools to Reimburse Agency Oversight Costs

The following federal authorities may be used to pay for EPA corrective action oversight costs:

- \* RCRA Section 3013 allows for reimbursement for EPA's oversight costs when the owner/operator does not properly investigate releases from a facility.
- \* EPA can recover costs or be reimbursed if CERCLA Sections 104 or 106 is used to order corrective action.

Recommendation: Northwest Support for Increased National Funding

The Northwest RCRA Program should continue to support attempts to increase national funding for corrective action.

**BUILDING STATE AND REGIONAL CORRECTIVE ACTION CAPABILITIES****Corrective Action Personnel Needs**

Successfully incorporating corrective action into the existing RCRA program will require a combination of specialized skills. Each State and EPA Region 10 will need to examine its program to determine how to best provide the necessary corrective action expertise. Successful implementation of a RCRA corrective action program will require the following skills:

- \* Hydrogeologic expertise
- \* Engineering expertise
- \* Chemistry expertise
- \* Accounting and financial expertise
- \* Site management, communication, and legal skills
- \* Administrative skills (last but not least!)

The types of skills needed will depend on the focus of the program during that year. Currently the Northwest RCRA program is focusing on investigations; however, in five years the focus could switch to corrective action measures implementation. During the time, EPA/State may need to change their personnel skill mix.

**Developing Corrective Action Capabilities**

Developing and maintaining the corrective action expertise of State and EPA RCRA personnel is paramount to efficiently and effectively implementing corrective action. Due to frequent staff turnover and newness of the corrective action program, few existing RCRA personnel are experienced in corrective action. In order to develop and maintain capabilities in the corrective action program, the following must occur:

- (1) Assuring that appropriate guidance, policies and rules are accessible to all corrective action staff;
- (2) Providing concise corrective action training on a frequent and ongoing basis to new and experienced RCRA staff; and
- (3) Implementing actions to retain experienced staff.

**Recommendation: Finding Technical Expertise**

Since it is unlikely that the States or EPA can afford to support all the recommended experts on the staff, they should consider the following ideas:

- \* Use contractors for those projects requiring a certain expertise for a limited amount of time.
- \* Share experienced technical advisors among the entire region on a consultant basis. For example, Idaho's corrective

action staff may consult with Washington's chemist on various aspects of correction action program implementation. Formal, temporary, personnel exchanges may be warranted on large, complex projects.

- \* Use Federal expertise from the EPA HQ office in Washington DC, as well as research laboratories in Research Triangle Park, North Carolina and Cincinnati, Ohio and elsewhere throughout the nation for consultation purposes.

Recommendation: Training

Continually seek and obtain appropriate training for RCRA staff and managers.

Recommendation: Workgroup

A Northwest Corrective Action Implementation Workgroup should be assembled to administer special corrective action projects. EPA contractors may be available to assist in these projects. Some potential projects include:

- \* Develop an annotated index of existing corrective action guidance, reference materials, policy documents and administrative procedures, which will be updated on a regular basis. Develop libraries of corrective action guidance and reference materials in each state and in Region 10.
- \* Prepare guidance documents on corrective action implementation topics such as effective use of interim corrective action measures, aspects of site characterization not discussed in the RFI Guidance, etc.
- \* Provide specialized corrective action training geared toward Northwest concerns and needs, including field trips during corrective action measure installations. Use cost effective training programs such as "Train the Trainer" in which experienced staff to teach new staff various aspects of RCRA; or interactive video programs as corrective action modules are developed.

In addition to administering special projects, the Workgroup should be the focal point for addressing ongoing corrective action implementation issues. The Workgroup should periodically discuss the implementation of the Northwest Corrective Action Strategy; consistency of implementation; State and EPA roles and workloads in implementing corrective action; additional training needs; incorporation of new policies, guidance, regulations and statutes affecting the corrective action program; and the latest technologies relevant to corrective action implementation.

### **Communicating Corrective Action Information**

In order to effectively and efficiently implement corrective action, staff from the States and EPA Region 10 need to communicate evolving corrective action policies and their corrective action implementation experiences, including the effectiveness of the latest technologies.

#### **Recommendation: Newsletter**

Publish a quarterly newsletter of the Northwest RCRA Program's corrective action activities. The newsletter could outline unique administrative or technical activities. Some potential newsletter items include:

- \* The corrective action authority used and the selection of corrective action measures under specific site conditions.
- \* The status of Subpart S and pertinent developments in the Federal and State rulemaking processes.
- \* Issues related to establishing action levels or clean-up standards.
- \* Information related to corrective measures implementation, including the success or problems associated with specific clean-up technologies, the ability of specific clean-up technologies to attain clean-up standards and any maintenance or construction problems.
- \* State and EPA organizational charts and lists of personnel with corrective action expertise.

The Northwest RCRA Program newsletter could also promote field trips within the Northwest during corrective action measure implementation (such as pump-and-treat systems). Additionally, the EPA Region 10's RCRA Weekly Report can be used to provide the status of corrective action activities in brief on a weekly basis.

### LIST OF REFERENCES

- \* Proposed Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities - Subpart S Rule
- \* Dingell Ground Water Monitoring Hearing Responses to Follow-Up Questions (8/16/89)
- \* EPA's Federal Facility Hazardous Waste Compliance Manual (OSWER Directive 9992.4, January 1990)
- \* Guidance for Environmental Priorities Initiative Facilities in the Superfund Pre-Remedial Program (OSWER Directive 9932.1)
- \* RCRA Corrective Action Outyear Strategy (October 30, 1989)
- \* RCRA Facility Investigation Guidance (Interim Final) (OSWER Directive 9502.00-6D, May 1989)
- \* RCRA Implementation Study (July, 1990)
- \* Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities; Financial Assurance for Corrective Action Proposed Rule (Federal Register Notice 10/24/86)
- \* Test Methods for Evaluating Solid Waste SW-846 (Third Edition, November 1986)
- \* Toxicity Characteristic Rule (Federal Register Notice, March 29, 1990)
- \* U.S. EPA Contract Laboratory Program Statement of Work for Inorganics Analysis Multi-Media, Multi-Concentration (7/88)
- \* U.S. EPA Contract Laboratory Program Statement of Work for Organics Analysis Multi-Media, Multi-Concentration (Revised 4/89)



## **APPENDIX 1**

### **Facility Environmental Priority Ranking Criteria**

#### **POINTS (circle the appropriate answer)**

The first three categories should be summed separately to give the overall environmental priority ranking. Categories 4-9 should be summed to give guidance as to how to manage corrective action at that facility, e.g., degree of oversight appropriate. Each category should be evaluated separately and independently from the other categories. For facilities where information is lacking, use best scientific judgement in assessing a rating.

#### **Category 1: Extent of Contamination**

- |         |           |  |
|---------|-----------|--|
| 10 pts. | Level 1A: | Groundwater contamination has been identified or is suspected, or there is an immediate risk to human health or the environment. |
| 5 pts.  | Level 1B: | Soil contamination is documented, but no groundwater contamination has been identified.  |
| 0 pts.  | Level 1C: | No soil or groundwater contamination has been identified.  |

\* Note: If there has been a release at a facility which poses a high level of concern, it should receive the highest rating in this category, even if the release is not to the groundwater (i.e. toxic air releases).

\* Note: For the purpose of this rating scheme, provisions are not given for whether the groundwater contamination is above or below drinking water standards. The only criteria is whether contamination has entered the groundwater, and hence poses the greatest health risk, relative to the other categories.

#### **Category 2: Toxicity of Known or Suspected Releases**

- |         |           |  |
|---------|-----------|--|
| 10 pts. | Level 2A: | The known or suspected release contains "Extremely-hazardous wastes" (such as acutely-hazardous waste under federal regulations, or the state equivalent). |
| 5 pts.  | Level 2B: | The known or suspected release contains "Toxic Hazardous Wastes" (40 CFR § 261).   |
| 0 pts.  | Level 2C: | The release contains ignitable, corrosive and reactive wastes and non-hazardous wastes (petroleum wastes etc.).  |

#### **Category 3: Facility Setting**

- |        |           |  |
|--------|-----------|--|
| 10 pts | Level 3A: | The facility affects sensitive bio-receptors or endangered species and/or human populations (e.g., air emissions, drinking water, wetlands). |
|--------|-----------|--|

- 5 pts      Level 3B:    The facility has no sensitive bio-receptors. Ground water and/or surface water is used for drinking water.
- 0 pts      Level 3C:    The facility is removed from human populations and sensitive ecosystems. Ground water and/or surface water is not used for drinking water.

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**TOTAL POINTS, Categories 1-3**

**20-30 points: High priority site**

**10-19 points: Medium priority site**

**0-9 points: Low priority site**

**Category 4: Enforcement History:**

- 2 pts.      Level 4A:    There is a high level of concern regarding the facility's enforcement history (i.e., Class I violations).
- 1 pt.      Level 4B:    There is a medium level of concern regarding the facility's enforcement history (i.e., Class II violations).
- 0 pts.      Level 4C:    There is a low level of concern concerning the facility's enforcement history (i.e., minor or no violations).

**Category 5: Financial Status of the Facility:**

- 2 pts.      Level 5A:    There is a high level of concern regarding the facility's financial status (i.e., bankruptcy suspect or business is for sale).
- 1 pt.      Level 5B:    There is a medium level of concern regarding the facility's financial status (i.e., facility appears solvent but has not adequately demonstrated financial assurance).
- 0 pts.      Level 5C:    There is a low level of concern concerning the facility's financial status (i.e., facility has demonstrated financial assurance).

**Category 7: Extent to Which the Nature of Releases is Known:**

- 2 pts.      Level 6A:    Little or no site characterization has been completed.
- 1 pt.      Level 6B:    Some site characterization has been completed but a lot more work must be performed.
- 0 pts.      Level 6C:    Substantial site characterization has been completed.

**Category 7: Level of Public Interest:**

- 2 pts.      Level 7A:    There is substantial public interest in the site.
- 1 pt.        Level 7B:    There is some public interest in the site.
- 0 pts.        Level 7C:    There is little to no public interest.

**Category 8: Type and Complexity of the Particular Corrective Action Activity:**

- 2 pts.      Level 8A:    There are complex and significant corrective action activities being performed (such as drum removal or installation of a groundwater pump and treat system).
- 1 pt.        Level 8B:    There are corrective action activities "average" in complexity and significance being performed (such as well installation or pump tests).
- 0 pts.        Level 8C:    There are relatively simple and insignificant activities being performed at the site (such as installation of a fence).

**Category 9: Capability of Facility to Conduct Corrective Action Activities**

- 2 pts.      Level 9A:    There is a high level of concern regarding the facility's ability to conduct corrective action activities (i.e., facility owner/operator or facility consultant has no experience in hazardous waste remediation).
- 1 pt.        Level 9B:    There is a medium level of concern regarding the facility's ability to conduct corrective action activities (i.e., facility owner/operator or consultant has an "average" level of experience and capability).
- 0 pts.        Level 9C:    There is a low level of concern concerning the facility's ability to conduct corrective action activities (i.e., the facility owner/operator has a reputation of doing good hazardous waste remedial work or has hired a highly respected consultant in this field).

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**TOTAL POINTS, Categories 4-9**

## APPENDIX 2

### **Differences Between Corrective Action and Closure/Post-Closure FA**

The October 24, 1986 proposed rule provides details on how to satisfy the corrective action financial assurance requirement. Like financial assurance for closure/post closure, the corrective action financial assurance demonstration can be fulfilled through use of a trust fund, surety bond guaranteeing performance, letter of credit, financial test and corporate guarantee. Unlike closure/post closure financial assurance, insurance and surety bonds guaranteeing payment into a standby trust fund are not acceptable mechanisms for corrective action financial assurance demonstrations.

Additionally the trust fund mechanism is modified because of the size and duration of corrective action costs (much greater) and the type of obligation (current). Proposed modifications to the trust fund include:

- revising the formula so that only the costs of corrective action expected to be incurred after the end of the pay-in period are used to derive annual payment into the trust fund
  
- revising the trust fund pay-in period to twenty years or one-half of the corrective action period, whichever is shorter.

Corrective action cost estimates are typically several times larger than closure/post-closure care cost estimates, and clean-up of ground water contamination may take up to 50 years. For facilities unable to meet the terms of the financial test, EPA is concerned that the impact of corrective action costs in addition to financial assurance costs may increase the number of bankruptcies and therefore increase the amount of unfunded corrective actions.

EPA is currently working on a proposal to revise the financial test mechanism for corrective action, closure/post-closure care and for liability coverage. The basic proposal is to eliminate the bond rating option and multiplier. Instead the owner/operator would demonstrate a net worth of \$10 million plus the cost of financial assurance (i.e., cost of corrective action, closure/post closure care, and liability coverage). The impact of this proposal would be to substantially increase the number of companies which would be eligible to use the financial test (without increasing the number of facilities which pass the financial test and later file for bankruptcy).