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## ACCELERATING RCRA CORRECTIVE ACTION: THE PRINCIPLES OF THE DOE APPROACH

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### ABSTRACT

The U.S. Department of Energy (DOE) is involved in the remediation of environmental contamination at many of its facilities under the Resource Conservation and Recovery Act (RCRA). RCRA's corrective action provisions were established by the Hazardous and Solid Waste Amendments of 1984 (HSWA). These provisions provided a broad mandate for the U.S. Environmental Protection Agency (EPA) and the States to require corrective action at hazardous waste treatment, storage, and disposal facilities (TSDFs). The goal of RCRA corrective action is the cleanup of releases of hazardous waste or hazardous constituents from solid waste management units (SWMUs) at TSDFs.

In response to the HSWA mandate, EPA established a program for the conduct of RCRA corrective action that was similar to that established under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). In addition, EPA developed and implemented its "stabilization" initiative as a means of quickly addressing immediate risks posed by releases until long-term solutions can be applied. Progress toward environmental restoration under the RCRA corrective action program has improved since EPA implemented its stabilization initiative, but remains slow.

To improve the efficiency of environmental restoration at its facilities, DOE is developing guidance and training programs on accelerated environmental restoration under RCRA. A RCRA guidance document, entitled "*Accelerating RCRA Corrective Action at DOE Facilities*," is currently being developed by DOE's Office of Environmental Policy and Assistance. The new guidance document will outline a decision-making process for determining if acceleration is appropriate for individual facilities, for identifying, evaluating, and selecting options for program acceleration, and for implementing selected acceleration options. The document will also discuss management and planning strategies that provide a firm foundation for accelerating RCRA corrective action. These strategies include a number of very basic principles that have proven effective at DOE and other federal facilities, as well as some new approaches.

The purpose of this paper is to introduce DOE's new guidance document, discuss the general approach presented in the guidance for accelerating RCRA corrective action, and to emphasize some of the more important principles of effective management and planning.

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PRINCIPLES OF THE DOE APPROACH**

Presented at

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by

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### INTRODUCTION

The U.S. Department of Energy (DOE or Department) is currently involved in the remediation of environmental contamination at many of its facilities under the Resource Conservation and Recovery Act (RCRA). RCRA's corrective action provisions were established by the Hazardous and Solid Waste Amendments of 1984, commonly referred to as HSWA. HSWA provided a broad mandate for the U.S. Environmental Protection Agency (EPA) and the States to require corrective action at hazardous waste treatment, storage, and disposal facilities (TSDFs). The goal of RCRA corrective action is the cleanup of releases of hazardous waste or hazardous constituents from solid waste management units (SWMUs) at TSDFs. The term SWMU includes both units used to manage hazardous waste and units used to manage nonhazardous waste.

In response to the HSWA mandate, EPA established a program for the conduct of RCRA corrective action that was similar to that established under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). The RCRA program was initially implemented through a series of guidance documents. Then, on July 27, 1990, EPA issued a proposed rule that outlined the RCRA corrective action program (55 FR 30798). Although a portion of the proposed rule has been finalized [Corrective Action Management Units (CAMUs) and Temporary Units (TUs) - 58 FR 8658, February 16, 1993], the bulk of the rule remains proposed and EPA continues to use the proposed rule as guidance. In addition, in 1991, EPA implemented its "stabilization" initiative, as a means of taking interim measures at RCRA sites to address immediate risks posed by releases until long-term solutions can be applied (U.S. EPA. Managing the Corrective Action Program for Environmental Results: The RCRA Facility Stabilization Effort. October 25, 1991).

Overall, EPA estimates that about 100,000 SWMUs at 5,800 facilities are potentially subject to RCRA corrective action requirements, and that 15,000 SWMUs at 2,600 of the 5,800 facilities may actually require remediation (Draft Regulatory Impact Analysis. March, 1993). Current sources conflict regarding the number of SWMUs that have actually been remediated to date, partly because much of the progress that has been accomplished is due to stabilization activities. It is clear, however, that progress toward environmental restoration under RCRA corrective action is slow.

To improve the efficiency of environmental restoration at its facilities, DOE has placed environmental restoration initiatives on a "fast-track." DOE continues to emphasize taking remedial action based on sound scientific and engineering data, but is placing a new focus on accelerated, cost-effective remediation, in partnership between the Department and stakeholders. In achievement of its mandate to provide relevant and effective environmental guidance to Departmental program and field elements, the DOE Office of Environmental Policy and Assistance (EH-23), is developing guidance and training programs on accelerated environmental restoration under RCRA and CERCLA. A RCRA guidance document, entitled "*Accelerating RCRA Corrective Action at DOE Facilities,*" is under development.

One key element of DOE's approach to accelerating RCRA corrective action that is being incorporated into the new guidance document is effective management and planning. Effective management and planning is a prerequisite for compliance with any complex regulatory program, but is especially

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important for environmental restoration. The new guidance document will identify management and planning strategies that will help to provide a firm foundation for accelerating RCRA corrective action. These strategies include a number of very basic principles that have proven effective at DOE and other facilities, as well as some new approaches.

The purpose of this paper is to introduce DOE's new guidance document, discuss the general approach presented in the guidance for accelerating RCRA corrective action, and to emphasize some of the more important principles of effective management and planning.

## **WHAT IS ACCELERATED RCRA CORRECTIVE ACTION**

In order to define what accelerated RCRA corrective action is, it is first necessary to examine the conventional RCRA corrective action process. The conventional RCRA corrective action process is depicted in Figure 1 (adapted from EPA's May 31, 1994 RCRA Corrective Action Plan - Directive No. 9902.3-2A). The process consists of four basic phases; the RCRA Facility Assessment (RFA), the RCRA Facility Investigation (RFI), the Corrective Measures Study (CMS), and Corrective Measures Implementation (CMI). During the RFA, SWMUs are identified and the potential for release determined. RFAs at most TSDFs were completed during the late 1980's and early 1990's. RFA's are typically conducted by the regulator; the subsequent phases are conducted by the facility with regulator oversight. If SWMUs are determined to have the potential for a release, the requirement to conduct an RFI is incorporated into the facility's RCRA permit or into an enforceable order, and the facility conducts the RFI. A CMS is then conducted to evaluate remedial technologies for those releases determined to be significant. The requirement to conduct remediation is then incorporated into the facility's RCRA permit (or enforceable order) and implemented during the CMI. Corrective action ends at a facility when remediation has been completed at all SWMUs, and is also implemented through the RCRA permit or order. Finally, interim measures, which include primarily short-term actions intended to stabilize releases, may be implemented at any time during the process, but are most likely to be implemented prior to or during the RFI phase.

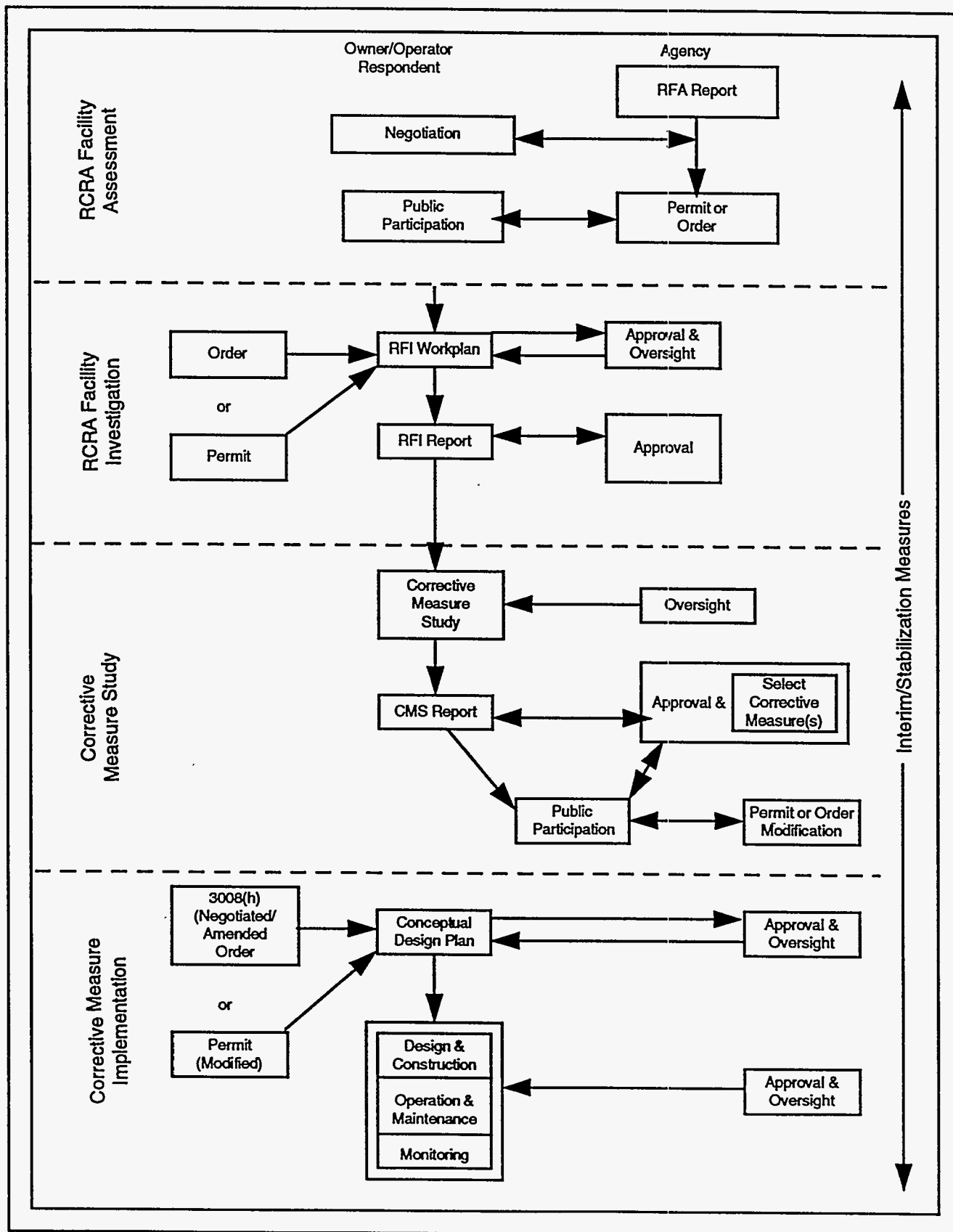
For a typical small or medium sized facility, it may take up to five years or more to reach the CMI phase. For larger facilities, including many DOE facilities, the time required to reach the CMI phase can be in excess of ten years or more. While much of this time is spent meeting requirements as spelled out in the statute and regulations, and coordinating activities with other laws, primarily CERCLA, there exists a number of opportunities for accelerating the process. The main objective of the new DOE guidance being developed is to outline a decision-making process for determining if acceleration is appropriate for individual facilities, for identifying, evaluating, and selecting options for program acceleration, and for implementing selected acceleration options.

Acceleration for DOE facilities is being examined with two major objectives. DOE's first objective is to reduce risks and prevent further release migration, in a faster time frame, pending long-term solutions. This objective is comparable to EPA's stabilization initiative. The second objective is to complete remediation at all SWMUs in a faster time frame on a facility-wide basis. Once remediation is completed at the facility, the regulator would proceed with a permit or order modification, resulting in a release from RCRA corrective action requirements.

## **APPROACH TO ACCELERATING RCRA CORRECTIVE ACTION**

An overview of the process being developed by DOE to achieve acceleration is depicted in Figure 2. Most facilities are in the RFI or CMS phase and many have implemented interim measures at individual SWMUs. Therefore, the new guidance document will present a decision-making process that considers where the facility is in the corrective action process at the time accelerated alternatives are being considered.

Figure 1. RCRA Corrective Action Process



\*Adapted from: U.S. EPA. RCRA Corrective Action Plan. Directive No. 9902.3-2A. May 31, 1994.

**Figure 2. Overview of RCRA Corrective Action Acceleration Process**

<p><b>Step 1. Determine if acceleration is appropriate at the facility at this point in time.</b></p> <ul style="list-style-type: none"> <li>● Evaluate environmental restoration program status (short- and long-term): <ul style="list-style-type: none"> <li>- Permits, orders, agreements</li> <li>- Relationship with regulator</li> <li>- Relationship with public/stakeholders</li> <li>- Funding and resources</li> </ul> </li> </ul>
<p><b>Step 2. Examine facility-wide considerations to position the facility for accelerated action.</b></p> <ul style="list-style-type: none"> <li>● Examine regulator, and public/stakeholder interactions</li> <li>● Examine release prevention/waste minimization procedures</li> <li>● Review decision-making process - delegate to the extent possible</li> <li>● Evaluate baseline status of current corrective action activities</li> <li>● Evaluate current SWMU grouping and tentatively re-group as necessary</li> <li>● Prioritize new SWMU grouping for accelerated action</li> <li>● Evaluate remediation waste management concerns</li> <li>● Establish generic Data Quality Objectives (DQOs) for data collection</li> <li>● Establish target action levels and clean-up levels (risk-based)</li> <li>● Understand the regulatory program and the regulator - obtain expert assistance</li> <li>● Use standard, comprehensive, and flexible "program" work plans</li> </ul>
<p><b>Step 3. Select specific accelerated action tools for SWMU groupings.</b></p> <ul style="list-style-type: none"> <li>● Evaluate tools for acceleration at SWMU groupings: <ul style="list-style-type: none"> <li>- Determine where the SWMU grouping is in the corrective action process</li> <li>- Identify objectives to be achieved through acceleration (e.g., risk reduction, source control, institutional controls, release from corrective action)</li> <li>- Identify and evaluate specific tools for acceleration, considering: <ul style="list-style-type: none"> <li>● Appropriate statutory and regulatory authority</li> <li>● Time and resources to risk reduction</li> <li>● Uncertainty</li> <li>● Potential regulator and public/stakeholder concerns</li> </ul> </li> </ul> </li> <li>● Select preferred tool or tools for implementation</li> </ul>
<p><b>Step 4. Implement selected accelerated actions.</b></p> <ul style="list-style-type: none"> <li>● Prepare for implementation (e.g., contractors, equipment, standard procedures)</li> <li>● Revise permits, orders, and agreements as necessary, incorporating flexibility</li> <li>● Implement accelerated action and monitor effectiveness</li> <li>● Documentation and completion</li> </ul>

The decision-making process under development within the new guidance will consist of four basic steps. In the first step, the facility will determine if acceleration is feasible at the facility at that particular point in time. Factors to be considered here include the status of permits, orders or agreements, relationship with the regulator and stakeholders, and funding and resources. For example, if a permit requiring corrective action was recently issued, it may be advisable to refrain from suggesting changes in requirements so soon.

If acceleration is determined to be an option, the facility will examine its operations and makes changes as necessary to facilitate identification, evaluation, selection, and implementation of acceleration alternatives. The facility also examines facility-wide considerations, such as waste management capacity and need for new units. This is the second step of the process. It is at this point where the principles of effective management and planning, which are the focus of this paper, are examined. More information on these principles is provided below.

During the third step, specific options for acceleration are examined and selected for individual SWMUs or SWMU groupings. These options will be referred to within the new guidance as "tools" for accelerating RCRA corrective action. Tools that may be applicable are dependent on the phase of RCRA corrective action that the SWMU or SWMU grouping is currently in. Referring back to Figure 1, for example, many SWMUs at DOE facilities are currently in the RFI stage. Tools that may be considered during the RFI stage to help accelerate the process include streamlining data collection activities, conducting a preliminary or focused CMS, and conducting voluntary corrective action, among others. The new guidance will provide facilities with a systematic process for identifying, evaluating, and selecting options for program acceleration at SWMUs or SWMU groupings.

During the fourth step of the process, selected acceleration alternatives are implemented, monitored, and completed. The new guidance also discusses interaction with other laws and includes many examples illustrating application of the principles, as well as the tools. The guidance is currently under development and assuming that resources remain available, is expected to be released by the end of the calendar year.

## **PRINCIPLES OF EFFECTIVE MANAGEMENT AND PLANNING FOR RCRA CORRECTIVE ACTION**

Effective management and planning is a prerequisite for compliance with any complex regulatory program. While there are certain principles of effective management and planning that are recommended components of an adequate environmental restoration program, these principles become essential if the facility is to be successful in accelerating RCRA corrective action. These include a number of very basic principles that have proven effective at DOE and other federal facilities. These principles will be discussed within the new DOE guidance, and as indicated above, are examined as part of the second step of the acceleration process. The most important of these principles are summarized below, with specific reference to how they can be used to promote acceleration.

**Prevent Releases/Minimize Waste** - If future releases can be prevented, facilities can devote resources to addressing past releases. The most important principle of accelerating RCRA corrective action is to prevent future releases. The prevention principle pretty much goes without saying with respect to new releases. What is not so obvious is preventing further releases at existing SWMUs. Release prevention will be especially important as facilities proceed under RCRA corrective action, from investigation to remediation. Active remediation provides many opportunities for additional releases. Examples include overflow of drums used to collect contaminated groundwater, leaking pipes from ground-water extraction and treatment systems, and transfer of contaminated soil from one area to another from improperly cleaned remediation equipment. Facilities should develop proactive programs to: 1) Prevent future releases; 2) Detect releases quickly if they do occur; 3) Take corrective action quickly to stop the release and prevent (further) release migration and conduct cleanup; and 4)



Continually monitor the effectiveness of ongoing prevention programs and modify these programs when they are not working.

An important facet of release prevention is waste minimization. Simply put, the less waste created, the fewer opportunities for releases and environmental contamination. During RCRA corrective action activities, waste minimization can be practiced by: 1) Carefully delineating areas requiring active remediation; 2) Segregating hazardous waste from non-hazardous (solid) waste; 3) Treating or otherwise managing contaminated media in-situ, where possible; and 4) Judiciously using water or detergents to rinse equipment, such as drilling rigs.

**Determine Regulator and Facility Priorities** - Because most RCRA corrective action activities must be approved or imposed at TSDFs through the RCRA permit or an enforceable order, the priorities of the regulator can strongly influence the feasibility of accelerating corrective action at a particular facility. Therefore, DOE should assess regulatory agency and facility priority as they examine their prospects for acceleration. By targeting scarce resources to address the most pressing problems, overall risk reduction at facilities can be achieved in a faster time frame.

Regulatory agency resources are not available to take immediate corrective action at all of the facilities that warrant corrective action. In recognition of this fact, in 1992 EPA established the National Corrective Action Prioritization System (NCAPS). NCAPS is a computer program that EPA uses to rank facilities for corrective action purposes. Using NCAPS, EPA evaluates SWMUs at a facility for actual and potential releases. A facility ranking of high, medium, or low is then assigned by EPA based on an estimation of the environmental benefit that would be realized from accelerated cleanup. NCAPS is intended to be a life-cycle prioritization system, where facilities are continually re-assessed to determine priority. As of the end of calendar year 1993, EPA had determined the priority for corrective action for most major RCRA facilities. Nearly 40 percent of all facilities were ranked by EPA as high priority; approximately 30 percent were ranked as medium priority, and 30 percent were ranked as low priority.

The new guidance document will encourage DOE facilities to learn their NCAPS ranking and EPA's justification for the ranking, including the contribution of individual SWMUs to the ranking. In most cases, the NCAPS ranking of a facility can be learned by contacting the regulator. This information is important for determining if acceleration of corrective action is feasible on a facility-wide basis, and for prioritizing individual units for action.

Generally, facilities with high NCAPS rankings will be the first to receive attention from the regulator. In this case, it is likely that the regulator will have initiated development of permit conditions or an enforceable order, and in some cases, permit conditions or an enforceable order may already be in place. There may be less of an incentive for the regulator to consider other alternatives in this situation because of limited resources. Nevertheless, viable acceleration alternatives can be proposed to the regulator, especially if the alternative would be expected to achieve risk reduction in a shorter time frame. High-ranked facilities are therefore encouraged to identify the options available for accelerating RCRA corrective action, and to work with regulators and stakeholders to implement feasible options, even if permit conditions or orders are under development or already in place. More important, if a permit or order has not been issued, facilities can suggest accelerated alternatives during the negotiation period. In addition, facilities can work with the regulator to structure the permit or order to maintain flexibility, such that better ideas do not require a formal permit or order modification prior to implementation.

Facilities ranked as medium or low priority are not as likely to receive immediate regulator attention. If medium or low priority facilities are already subject to permit conditions or orders, these facilities are likely to experience a lower level of regulatory oversight. At the least, the schedule for completion of

milestones, such as RFI work plans, may be drawn-out over a longer period of time. At these facilities, and especially at facilities that do not have permit conditions or orders in place, there may be more opportunities for undertaking specific types of accelerated actions, such as voluntary corrective actions. In fact, EPA is encouraging lower-ranked facilities to consider voluntary actions.

The DOE facility should also consider developing a facility-specific ranking for individual SWMUs or for SWMU groupings. Developing a facility-specific ranking is important, because, like EPA, DOE also lacks the resources to do everything at once. Equally important, facilities may have reasons that regulators would be reluctant to consider for wanting to take action at certain SWMUs earlier than others. For example, some facilities may wish to remediate certain portions of their facility earlier than others considering future activities (e.g., new construction). Based on the facility-specific priority ranking, the facility can identify acceleration options for implementation at SWMUs or SWMU groupings and discuss feasibility with the regulator and stakeholders.

**Understand the Regulatory Program and the Regulator** - Understanding the regulatory program and the regulator is one of the keys to successful acceleration of the RCRA corrective action process. Following is an example that illustrates the importance of understanding the regulatory program and the regulator.

In the early days of RCRA corrective action, many facilities were directed by regulators to conduct comprehensive investigations, including analyses for all RCRA 40 CFR Part 261 Appendix VIII constituents. Some facilities resisted conducting unnecessarily broad and costly investigations and negotiated a more reasonable scope for their facility investigations. At the same time, other facilities blindly accepted these requirements, not realizing that there were opportunities for negotiation. It didn't take these facilities long to realize the costs associated with overly broad investigations, however. These facilities then went through a painful process of working with their regulator to modify their permit or order to focus on a more reasonable investigation. Meanwhile, time and resources were wasted.

The point is to underscore the importance of understanding the regulatory program. It is important for facilities to understand all the options available to them for conducting and accelerating RCRA corrective action. Most important, facilities must understand that RCRA, and corrective action in particular, is for the most part a negotiated program. While ultimately, the regulator is responsible for issuing permits, orders, or agreements that compel the facility to conduct RCRA corrective action, the facility can influence requirements and schedules through negotiation.

Equally important to knowing the regulatory program, is knowing the regulator(s), both organizationally and individually. Each EPA Region and State has its own goals, objectives, policies, and procedures. Hence, the program is inconsistently implemented by the Regions and States; what "works" in one location, will not necessarily work in another. Also, the preference of the individual corrective action official may influence how corrective action is imposed at a particular facility. It is, therefore, important for facilities to understand the regulatory program as well as the individual regulator. Facilities should: 1) Employ or contract with personnel that have experience with the regulator; 2) Learn as much as possible about the program and the regulator through training courses, guidance documents, symposia, conferences, trade journals, peers, etc.; 3) Keep open the lines of communication through status and similar meetings; and 4) Research corrective action decisions made regarding other facilities (public and private) located within the Region or State.

**Remain Current With New Developments** - RCRA in general, and the RCRA corrective action program in particular, are evolving programs. Programs evolve as a result of public opinion, political pressure, new technological developments, court decisions, fiscal limitations, and many other factors. EPA's stabilization initiative, which put new focus on implementing interim measures as a means of early risk

reduction, is a prime example of program evolution. The CAMU and TU rule is another good example of program evolution. Knowing that the CAMU and TU rule was in the process of being finalized, many facilities urged their regulator to delay decisions on corrective measures pending promulgation of this final rule, because of the new waste management options it was expected to provide. More recently, EPA published for comment a draft list of screening levels for 107 of the most common contaminants found in soil (59 FR 67706, December 30, 1994). These levels are concentrations below which cleanup would not be required. Concentrations above these levels mean that further study would be required prior to determining the need for cleanup. This is a particularly important development in the context of corrective action acceleration because many SWMUs may now qualify for determinations of no further action.

RCRA corrective action is particularly vulnerable to evolution because the bulk of the regulations that would formally implement the program have yet to be promulgated. New developments will also occur in related programs that will directly affect RCRA corrective action. For example, the pending CERCLA reauthorization is expected to define risk goals, remedy cleanup standards, consideration of land use, and other issues that will affect RCRA corrective action. RCRA is also up for reauthorization, which provides more opportunity for program evolution.

It is important to remain current with these new developments. DOE facilities should: 1) Designate one or more individuals with the responsibility of maintaining currency with new developments and upcoming events, and communicating with the rest of the organization; 2) Maintain subscriptions with major and local environmental newsletters; 3) Establish contacts with individuals in DOE's Office of Environmental Policy and Assistance; 4) Obtain relevant DOE and EPA guidance materials and attend training programs, conferences and symposia and other information transfer events; 5) Communicate frequently with the regulator; and 6) Communicate frequently with peers, and especially other DOE facilities.

**Establish a Good Rapport With the Regulator** - Early relations between DOE facilities and their RCRA regulators can be characterized by a mutual distrust and lack of cooperation. DOE facilities have more recently begun to establish better relationships with their regulators. The advantages of establishing a good relationship with regulators are significant. Most important, regulators are more receptive to new ideas and new approaches, such as those put forth in the new DOE guidance being prepared. In addition, a good rapport facilitates the establishment of a team approach to problem-solving, which can be critical when innovative solutions are being examined.

It takes time and a concerted effort to establish a good relationship with the regulator. DOE facilities should: 1) Be open to new ideas and approaches put forth by the regulator; 2) Be cooperative rather than antagonistic; 3) Invite the regulator on frequent site tours to show progress or accomplishments; 4) Establish an onsite location for the regulator (larger facilities only); and 5) Hold regular meetings with the regulator where progress and problems can be discussed in an team setting.

**Establish a Strong Public Participation Program** - DOE management has long recognized the importance of public participation in decision-making associated with environmental restoration activities. In 1991, guidance on this subject was published by DOE's Office of Environmental Guidance, entitled "Public Participation in Environmental Restoration Activities" (DOE/EH-0221, November 1991). Then in October 1992, DOE's Assistant Secretary for Environmental Restoration and Waste Management (EM) issued a statement of policy on public participation, declaring that the overall goal is "to create an open and accessible decision-making process that results in decisions that are technically and economically feasible, environmentally sound, health and safety conscious, address public values and concerns, and can be implemented." This policy statement was followed by DOE's "Public Participation Guidance for Environmental Restoration and Waste Management" (March, 1993), which advocated public participation planning.

Due in part to these concerted efforts, many DOE facilities have made significant progress in improving relations with their local communities. DOE facilities are making a genuine effort to educate the public on site remediation activities and to involve the public in actual decision-making. Public participation for *accelerated actions* needs to be considered, therefore, in light of the facility's existing structure for public participation and community relations. Most DOE facilities will have facility-wide community relations plans for RCRA and CERCLA activities. These plans specify, in general terms, the community relations activities that will be appropriate for environmental restoration activities. However, each specific accelerated undertaking may have additional needs and/or create additional demands for public involvement. Another activity that the DOE facility should consider, therefore, is conducting a strategic analysis of the need for, and implications of, developing a specific and more detailed public involvement plan as part of the initial strategy for acceleration.

Regulators, the public, and other stakeholders must be provided with the opportunity to take an active role in the decision-making process. However, all parties need to realize first that compromise is not always easily achieved, second that decisions are subject to funding limitations, and most important, that decision-making regarding RCRA corrective action is not a democratic process. While DOE has substantial opportunities for suggesting courses of action, and stakeholders have significant opportunities for input into the decision-making process, ultimately, the decision regarding available options under RCRA lies with the regulatory authority. All parties to the decision need to be flexible to the extent possible and compromise where necessary.

**Consolidate SWMUs Into Groupings** - Another important principle is to establish (or re-establish) SWMU groupings. SWMU groupings can be established based on a number of factors, including unit type, unit age, unit design, physical (3-dimensional) location, waste type and constituent content, release characteristics, regulator priority, facility priority, relative risk to human health and the environment, and many other factors.

Individual SWMUs should be organized into major categories, subcategories, and even smaller categories if appropriate. In essence, the smallest SWMU grouping should be established based on the least common denominator concept. Only those SWMUs with the same type of problem, the same release characteristics, and that may potentially be subject to the same corrective action (accelerated or not) at the same time, should be in the lowest subcategory.

SWMU consolidation into SWMU groupings is especially useful for large facilities with multifaceted problems at different physical locations, as is the case with many of DOE's larger facilities. DOE facilities under the CERCLA program have been practicing consolidation of contaminated sites into what are called operable units (OUs) for years. Most often, major OU categories are established based on physical location. The contaminated sites within the OUs are then further organized into subcategories based on many of the factors listed above. DOE has taken a site-specific approach to organization of sites into OUs. A site-specific approach to similar organization of SWMUs under the RCRA program should also be taken.

During the process of SWMU consolidation into groupings, facilities are encouraged to critically examine the manner in which SWMUs should be organized. Moreover, if SWMUs are already organized into groupings, which is the more likely case, changes should be suggested if deemed appropriate. Further, SWMU groupings should be established such that future changes that may be appropriate can be implemented without having to modify permits, orders or other agreements.

The advantages of SWMU consolidation into groupings relate to ease of management and facilitated decision-making. In particular, if SWMUs are properly categorized based on the least common denominator concept, accelerated options will be easier to evaluate, easier to implement, and cost less from an administrative standpoint.

**Delegate Authority** - One of the less obvious but nevertheless important principles of accelerating RCRA corrective action is delegation of authority. The DOE field organization should delegate decision-making to the lowest level possible, preferably to the SWMU or SWMU grouping (operable unit) manager. While decisions that have significant funding or policy implications need to be approved at a fairly high level within the DOE organization (often with headquarters approval and oversight), there are many decisions that can be approved at a much lower level. The less approvals required for any one decision, the less time it will take to implement that decision. Delegation of authority to the lowest level possible can have a significant effect on accelerating the process. In accordance with this principle, DOE facilities should carefully evaluate all the decisions that need to be made during the corrective action process, and categorize these decisions. Each category of decision can then be delegated to the lowest level possible within the DOE organization.

**Obtain Expert Assistance** - Remediation programs like RCRA corrective action and CERCLA are among the most complex regulatory programs. Successful implementation of these programs requires many different technical and non-technical fields of expertise. In addition, many facets of RCRA corrective action require interaction with other regulatory programs, primarily CERCLA, but including many other federal laws and state equivalents. It is virtually impossible for any one person, or for even a group of several people, to possess all the knowledge to make RCRA corrective action work. Another important principle of accelerating RCRA corrective action is to obtain expert assistance where necessary.

Perhaps the greatest potential for delay that can be introduced by the facility is the need for re-work. A good example is moving stored remediation waste from one location to another because the original location did not meet regulatory standards. These types of errors, which can also result in substantial fines and other actions, are often caused by the failure to recognize the need for expert assistance. Expert assistance can save time as well as resources. DOE facilities should maintain a standing group or panel of technical and regulatory experts for input into corrective action decisions, work plans, reports, and similar documents. DOE facilities should also seek DOE headquarters input regarding particularly innovative actions and actions that may set precedents.

## **REVIEW AND CONCLUSION**

As the nation progresses more and more towards the goal of doing more with less, federal facilities in particular need to find innovative ways to meet their obligations under the various environmental laws. The new guidance document that DOE is developing for "*Accelerating RCRA Corrective Action at DOE Facilities*," including both the principles of effective management and planning, and the tools for accelerating RCRA corrective action, will provide some new ideas toward meeting this goal.

Acceleration of RCRA corrective action, however, will not always mean lower costs. On the contrary, in many cases where corrective action is accelerated, the costs will increase, at least in the short term. On the other hand, in most cases risk reduction would occur sooner. As accelerated alternatives are examined, each facility will need to evaluate cost and risk reduction associated with specific actions, considering overall available funding. It is clear that tough decisions are in our future.