United States Environmental Protection Agency

Office of Solid Waste and Emergency Response

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INTRODUCTION

To meet the challenges posed by a large regulated community, a growing backlog of release sites, and limited resources, underground storage tank (UST) programs at all levels of government must find ways to deal with releases more quickly, efficiently, and effectively. This directive describes opportunities for improvement and streamlined implementation of EPA's regulations on release response and corrective action for underground storage tanks by using the flexibility that exists in these rules. The purposes of this directive are to stimulate continuing innovation in UST programs and to help accelerate efforts to streamline UST corrective actions nationwide.

Streamlining means using total quality management techniques, improved technologies, and innovative regulatory approaches to make UST corrective actions faster, less costly, and more effective. The benefits of aggressive streamlining efforts include improved environmental protection and decreased backlogs of cleanup sites as well as reduced corrective action costs and adverse economic impacts. Supporting and encouraging streamlining efforts at all levels of government involved with the UST program has been and will continue to be the policy of EPA.

In addition to developing streamlined administrative procedures and encouraging wider use of improved technologies, implementing agencies can make significant gains by taking greater advantage of the flexibility in the federal regulations. For example, phrases such as "… unless otherwise directed by the implementing agency…" provide these agencies with flexibility. This directive can help implementing agencies develop alternative procedures and requirements that protect human health and the environment and that permit faster, more effective, or less costly responses to releases.

The directive identifies opportunities to carry out federal UST regulations (40 CFR 280 Subpart F) in more flexible, efficient and cost-effective ways. It includes specific examples of streamlined policies and procedures that permit faster, less expensive and more effective responses than many of today's more familiar approaches. In most cases these examples reflect innovations that are already in use by some state and local programs. Implementing agencies should not interpret the examples to be requirements. The intent of the directive is to stimulate improvement through streamlining, not to require specific changes in all UST programs. Although this directive is based on the federal release response and corrective action requirements, it is primarily intended to facilitate streamlining in state, local, and territorial UST programs, particularly where these programs are implementing the requirements of the federal regulations. When states are implementing regulations that differ significantly from the federal standards, some of the examples given may not apply. However, streamlining has benefits for all programs including approved state programs.

ORGANIZATION OF THIS DIRECTIVE

This directive is organized in the following sections:

- Background Of EPA's Corrective Action Regulations presents the principles that guided the development of EPA's underground storage tank corrective action standards;
- Developments Since September 1988 delineates some of the challenges and opportunities facing underground storage tank programs since the regulations were published;

- Implementation At The State And Federal Levels describes how UST program staff and managers should implement this directive;
- Examples Of Streamlined Implementation lists corrective action requirements and streamlined methods used to implement the standards; and
- Conclusions summarize the rationale and thrust of the directive and gives examples of some of the gains in productivity that are possible.

BACKGROUND OF EPA'S CORRECTIVE ACTION REGULATIONS

When EPA drafted the UST technical standards in 1988, the Agency used the following principles to guide the development of the regulations.

- The program must be based on sound national standards that protect human health and the environment.
- The program must be designed to be implemented at the state and local level.
- The regulations must be simple and understandable so that owners and operators are able to identify what they must do to comply.
- The regulations must not inhibit new developments in technology.
- The regulations must be flexible and, wherever possible, accommodate small businesses with limited resources for capital improvements.
- The regulations should, if possible, build on current industry practice to encourage voluntary compliance.

EPA used these principles to develop corrective action standards that require owners and operators to stop continuing releases, to mitigate fire and safety threats, and to plan and perform long term remediation at appropriate sites. However, the rules allow considerable flexibility in how the actions are to be carried out.

Because they are more general, the state program approval objectives (40 CFR 281) allow even more flexibility than the technical standards in implementing a corrective action program. The federal technical standards are more prescriptive and detailed than the state program approval objectives because the technical standards had to provide implementing agencies with enough detail to allow them to carry out the technical standards before state and local standards were developed and approved. While the state program approval objectives are not the subject of this directive, they are an indication of EPA's intention to allow flexibility and encourage innovation in the implementation of the program.

DEVELOPMENTS SINCE SEPTEMBER 1988

The UST Program has grown and evolved considerably since September 1988 when the final rules took effect. Six major developments have occurred that influence the implementation of the corrective action standards.

- All states have developed corrective action programs and are regulating corrective actions. Approximately 1,500 state and local regulators are involved with the UST program.

- The number of sites with reported releases is growing rapidly. As of July 1992, over 160,000 releases have been reported; over 110,000 corrective actions have been initiated; and over 44,000 corrective actions have been completed.
- EPA and many states have gained significant experience using total quality management techniques to make improvements in their underground storage tank programs. This systematic approach to understanding work processes, managing programs, and improving performance has proven value for all UST programs, particularly in helping states speed up and improve the oversight of their increasing cleanup caseloads. EPA will continue to encourage and support this important approach to program management.
- A large number of states (43 as of June 1992) are developing assurance funds to help pay for remediations. The state governments with operating funds have dual roles: environmental agencies are establishing minimum standards for corrective action to protect human health and the environment, while State Fund Administrators are attempting to control cleanup costs in order to maximize the benefit to the public from funds under their control.
- A better understanding of the physical, chemical, and biological aspects of contaminant migration and removal has created new corrective action technologies and strategies. New site assessment tools (including vapor surveying, field analysis of soil and water contamination, and oxygen and carbon dioxide surveys) allow many decisions about the extent and mobility of contamination to be made in the field. Vacuum extraction, air sparging, and passive bioremediation can now be employed without conducting time-consuming feasibility studies. Using these new site assessment and corrective action techniques, it is now possible to complete many cleanups in the amount of time traditionally allocated to the corrective action planning process.
- Both industry and regulators have a clearer understanding of the costs and benefits of various corrective action options and are incorporating improved approaches into standard practices. In fact, the nationally recognized organization ASTM (formerly known as the American Society for Testing and Materials) is currently developing consensus standards for site investigation and corrective action. The American Petroleum Institute has revised and expanded several of its recommended practices related to corrective action. The National Fire Protection Association has revised its recommended practices on release investigation and emergency response.

IMPLEMENTATION AT THE STATE AND FEDERAL LEVELS

Federal UST program staff and managers, particularly in the Regions, should actively encourage implementation of this directive in the course of their routine work with states. Consistent with OUST's goals of building state capabilities and streamlining corrective action programs, providing direct support for state streamlining efforts will remain a top priority for the program. State program managers seeking streamlining support from EPA should direct their requests to EPA's Regional UST programs.

At a minimum, Regional UST program staff should make sure that each of the state and territorial UST program managers seriously consider the types of options presented. Regional staffers can use their routine contacts with state staffers during grant negotiations and oversight processes to encourage states to implement this directive. One possible way to encourage implementation of the directive is for regions to negotiate with states to address appropriate improvement opportunities identified in the directive as a

task in their cooperative agreement workplans. Regions can also encourage states to investigate and develop additional improvements on their own or in the context of EPA-sponsored streamlining projects.

Although the main intent of the directive is to facilitate the streamlining of state and local programs, any EPA staff member who is implementing the federal rules, on tribal lands for example, should make use of the procedures outlined in this directive wherever they are appropriate. This will have benefits for the EPA staff—giving them direct experience with streamlined processes and thereby helping them form the base for evaluating and promoting the use of these procedures in states. Like state staffers, these EPA staff should also work on their own processes as much as possible to identify and act on other opportunities for improvements.

As the corrective action programs in more states make progress streamlining their processes, the long-term results should be faster, more protective, and lower cost cleanups, as well as reduced cleanup backlogs and lessened adverse economic impacts. In the near term, successes will be more modest. Continuing efforts to streamline program administration and to revise state policies, guidance, or regulations that encourage or require streamlined response procedures will represent some initial indicators of progress. An existing indicator of progress is the fact that one state using streamlined procedures has already documented a major reduction in the average time needed to complete cleanups performed there. It takes time, effort, and, in some cases, additional state authorities to implement the approaches that are described in this directive in state programs. Where requirements established under other national programs, such as permitting air and water discharges, delay UST cleanups, many improvements will require greater cooperation among programs at the national level. EPA does not expect state programs to undergo revolutionary changes immediately, but it does promote the concept of continuous improvement.

EXAMPLES OF STREAMLINED IMPLEMENTATION

This part of the directive is an analysis of some of the release response and corrective action requirements of the federal UST rules (40 CFR Part 280, Subpart F). For each example the requirements of the federal rule are briefly summarized in bold type, and one or more illustrations demonstrate how states can take advantage of the flexibility in the rule to implement streamlined response and oversight procedures. The examples are not exhaustive; they do not cover every requirement of Subpart F, nor do they cover all possible options for flexible application of the regulations. They do illustrate a range of possibilities that can be implemented to improve the performance of UST programs.

Reporting Format

EPA requires owners and operators to supply information or report results of several corrective action activities to the implementing agency. (The table at the end of this directive lists these requirements and citations.) The requirements do not specify the format of the information. The implementing agency can use this flexibility to require or allow formats that make this information transfer more efficient. Much of the information that is required to make regulatory decisions or to keep the regulator informed of progress at a site can be put into standard forms and letters. In some cases, it may be more efficient for the implementing agency to receive the information by facsimile, modem, or computer disk instead of by mail or hand delivery. Release-report forms are commonly used in state programs nationwide. Standardized tables and graphs for corrective action progress reports are not commonly used, but they

could improve the quality of and reduce the time for the progress reviews. The Texas Water Commission is testing an automated corrective action tracking and expert advisor system that accepts site data from computer disk files.

Combining Reports

EPA requires owners and operators to submit the reports listed in Table A within specific time frames or at the direction of the implementing agency. The implementing agency is free to make reasonable adjustments in the reporting schedule, thereby allowing reports to be combined. Combining reports is a reasonable alternative when it enables agencies to accelerate the cleanup process, reduce paperwork burdens, or improve the quality of necessary paperwork while maintaining an appropriate system of oversight.

Some states have combined reports to reduce the number of reports they process and to improve the quality of information they review. Arizona has combined the reports it requires on the initial site characterization and investigation. Many states allow owners to include information on free-product removal in other reports (such as the site characterization report). New information on characterization and removal progress is also incorporated into other required documents (such as the corrective action plan). Several states integrate the site assessment plan with the corrective action plan to streamline the process and improve the quality of the site assessment. For these states it is easier to determine the adequacy of a site assessment when it is reviewed for its ability to support a proposed corrective action. The states that have adopted this approach (Minnesota, for example) worked with site assessment contractors for several years to develop clear guidance on site assessment practices. These states have often found that Consultants Days have helped them gather feedback on their processes and communicate their requirements to contractors and consultants.

Groundwater Classification

Section 280.63, Initial Site Characterization, Subsection (a), requires the owner/operator to submit data from available sources and/or site investigations on groundwater uses unless directed to do otherwise by the implementing agency. Some states (e.g., Connecticut, Delaware, Kansas) have streamlined this process by producing maps showing groundwater use and sensitivity. Their regulations covering remediation goals and reporting requirements and their guidance are keyed to the mapped groundwater classification zones. These approaches help states make quick, site-specific decisions and reduce reporting burdens by using existing data (i.e., maps) that they can access very quickly.

Initial Site Characterization Data Sources

Section 280.63, Initial Site Characterization, Subsection (a) requires owners and operators to assemble information about the site and the nature of the release unless directed to do otherwise by the implementing agency. The regulation describes the general types of data to be reported, but does not list specific data elements to be gathered, or specify how they should be gathered. Also, the regulation does not require that the data be gathered in a discrete step (i.e., sometimes data from other steps may be used to satisfy this requirement). Data on the nature and extent of contamination are often collected while confirming a release or abating immediate hazards. Often these data are collected with field measurement techniques such as headspace analysis (i.e., the polyethylene bag sampling system) and soil vapor

surveying. If used properly, these techniques can help describe the nature of a release and estimate its quantity without laboratory analysis. Cleanup can then begin without waiting for results from these laboratory analyses.

Identifying Immediate Hazards

Section 280.63, Initial Site Characterization, Subsection (b) directs owners and operators to submit the initial site characterization information within 45 days of confirming a release or another reasonable time period determined by the implementing agency. The time frame for submitting this information may be longer if these data are to be submitted along with additional data or reports at a later date; it could be shorter for cases in which hydrologic conditions warrant rapid response. New Mexico and Ohio use these data to support a prioritization ranking that quickly identifies immediate hazards. The data needed for ranking the site are well defined and easily collected. New Mexico requires that this activity be completed within 7 days. Where reporting requirements are relatively simple, well defined, and clearly communicated, accelerated reporting schedules can help eliminate delays, making cleanups more effective.

Free-Product Removal

Section 280.64, Free-Product Removal, requires owners to remove free product to the maximum extent practicable as determined by the implementing agency. In achieving this, owners and operators must minimize the spread of the contamination into previously uncontaminated zones. Owners and operators also must submit a free-product removal report within 45 days unless directed to do otherwise by the implementing agency. The regulations provide substantial flexibility to implementing agencies on procedures for removing free product. This flexibility may be exercised when making decisions on:

- The criteria for determining the presence of free product and its extent,
- The methods for preventing its migration and for its removal, and
- The necessity and content of any reports.

New Mexico limits initial free-product removal actions to sites where the free-product accumulation is thicker than 1 inch. When free product is less than 1-inch thick, New Mexico requires that it be addressed as part of an overall groundwater corrective action plan. The state determined that their subsoils which have a high clay content tended to limit the migration of free product. In addition, the state concluded that common free-product removal techniques would not be highly effective at such sites. Instead, these techniques sometimes made thorough cleanups more difficult and expensive because they could smear product through the subsurface, binding much of it to soil particles. Therefore, at sites with less than an inch of free product, the state decided that addressing free-product recovery somewhat later, as part of a comprehensive corrective action plan, was more practicable as well as more protective and cost effective.

Field Measurements

Section 280.65, Investigation for Soil and Groundwater Cleanup, requires owners and operators to conduct investigations of, and submit information on, the release, the release site, and the surrounding area possibly affected by the release under any one of four conditions: (1) there is evidence that groundwater wells have been affected; (2) recovery of free product is necessary; (3) there is evidence that

contaminated soils may be in contact with groundwater; or (4) the implementing agency requests an investigation, based on the potential effects of contaminated soil or groundwater on nearby surface water and groundwater resources.

The regulations do not specify measurement techniques for investigating the release and impacts from the release. Most state programs currently require laboratory analyses for this investigation, but field measurement methods are now available that can improve the quality of the investigation and eliminate delays caused by laboratory processing time. Field measurement-based investigations typically rely on a variety of measurement methods including: field gas chromatography; the polyethylene bag sampling system (Lab-in-a-Bag); the Hanby colorimetric method; the Draeger extraction method; immunoassay photometric methods; soil vapor analyses for hydrocarbon compounds, carbon dioxide, and oxygen; and analysis for dissolved oxygen in groundwater.

Using field methods instead of laboratory analyses, investigators can analyze more samples, more quickly, and at a lower cost and then use the results to select additional sampling points. In some cases, such as confirming a release, field measurements may be sufficient. In other cases, such as measuring progress toward cleanup goals as work proceeds, additional laboratory analyses may be needed to confirm the results from the field analyses. To use field measurement investigations, implementing agencies may have to produce or revise rules or guidance, and ensure that consultants and regulators are adequately trained.

Corrective Action Plans

Under Section 280.66, Corrective Action Plan, the implementing agency may require owners and operators to submit additional information or develop and submit corrective action plans. If a corrective action plan is required, owners and operators are responsible for submitting a plan that provides for adequate protection of human health and the environment as determined by the implementing agency. The implementing agency will approve the corrective action plan only after ensuring that the implementation of the plan will adequately protect human health, safety, and the environment. Upon approval of the corrective action plan or as directed by the implementing agency, owners and operators must implement the plan, including modifications to the plan made by the implementing agency.

Unlike other sections of the UST corrective action regulations where owners and operators are required to conduct certain cleanup and reporting steps if specific conditions exist at their site, this section requires action by the owner only if requested by the implementing agency. The implementing agency's request for corrective action planning can be based on the characteristics of specific sites (e.g., review of a site assessment report) or based on a policy or set of criteria that applies to a large number of sites (e.g., action levels, hydrogeological conditions, or site conditions such as contaminated groundwater). This flexibility allows the implementing agency to target its review of corrective action plans to sites at which oversight is needed most.

Implementing agencies may determine that review of site- specific plans will not improve the timeliness or effectiveness of the corrective action, for example, where releases pose little threat to human health and the environment or where cleanup will be relatively simple. In such cases, implementing agencies may choose not to require submission of corrective action plans. As an alternative, agencies may direct owners and operators to proceed with cleanup according to an acceptable standardized approach (e.g., in clear

guidance, regulation, or a consensus code) that serves as a plan. However, even in those circumstances, owners and operators may still find a site-specific plan necessary, for example, to meet reimbursement fund requirements or to understand specifically what services he or she will be purchasing.

Few states are currently taking full advantage of the flexibility available in this section of the regulation; however, given the current workloads, this is an area with many streamlining opportunities. Many states already use priority ranking systems to determine which sites to address first. Some of these same ranking systems can be used to determine the required content of corrective action plans. Implementing these approaches requires mutual respect and cooperation between the implementing agency and the regulated community, coordination of the policies of regulatory and funding agencies, and clear and specific goals for protecting human health and the environment.

The scenarios that follow illustrate how the flexibility in the rule can be used in four different sets of circumstances when implementing agencies may or may not require corrective action plans or continued active remediation.

Scenario 1: The implementing agency wants to review a corrective action plan for additional cleanup. In this scenario, the implementing agency defines the criteria for determining the level of oversight required. Sites that will generally require the preparation and review of corrective action plans may include: sites where the groundwater has been contaminated; sites where the owner or operator plans to use a particular technology (e.g., bioremediation); sites where the contractor has little experience with the selected technology; or sites where National Pollutant Discharge Elimination System (NPDES), reinjection, or air discharge permits are required. Connecticut requires site- specific corrective action plans for only those sites for which it has issued a notice of violation for groundwater contamination. As with other reports, the corrective action plan can be combined with other reports, such as the surface water discharge plan of the NPDES permit. In addition, states can request simpler or more generic plans for certain types of corrective actions (e.g., for sites where only soil is contaminated).

Scenario 2: The implementing agency decides that further corrective action is needed but that submission of a corrective action plan is not warranted. In many situations (e.g., cleaning up shallow soil contamination), the need for oversight may be minimal when adequate cleanup guidance documents exist and when the cleanup contractors understand what the implementing agency expects. If the responsible party is pursuing corrective action and is making adequate progress, the submission and review of a corrective action plan by the implementing agency may not be necessary, and may only slow down the cleanup process. However, the responsible party needs to be able to demonstrate that the corrective action is meeting specified performance goals (e.g., annual reduction in benzene, control of contaminant movement) on a schedule set by the implementing agency.

Before it can begin to use this approach, the implementing agency must first provide guidance on how it will determine if cleanups are progressing adequately, how progress reports will be formatted, and when reports will be due. Wisconsin reviews corrective action plans for only those sites where drinking water is threatened. For other sites, Wisconsin sends the responsible parties detailed cleanup guidance and asks them to submit reports when their corrective actions are complete. Many programs lack the staff necessary to provide timely reviews of all the plans and reports currently required. Therefore, this approach can be more protective because it allows many cleanups to proceed at sites where they would otherwise be stalled, awaiting approvals of unnecessary site-specific documents.

When state cleanup reimbursement funds are involved, the responsible party may be required to show that the chosen corrective action method is cost-effective and that the contractor's fees are appropriate.

Another possible approach for these sites is to substitute an exposure or risk assessment for the corrective action plan documenting that site-specific conditions do not warrant further cleanup. Deed restrictions or other types of notices to inform future property owners of the existence of residual contamination can be incorporated into the corrective action to ensure that contamination left at the sites does not become a threat to human health and the environment because of a change in land use.

Scenario 3: The implementing agency requires monitoring but no additional corrective action. At many sites the migration of contamination is unlikely; however, the contamination could move and become a threat to human health and the environment. This uncertainty can be reduced by monitoring the levels of contamination for a period of time to demonstrate that the contamination is not moving or increasing and is not a significant threat. A monitoring-only alternative may be appropriate for UST sites where: the groundwater is deep and the contamination is confined to shallow soil, yet a concern exists as to potential exposure; the groundwater is not suitable now or in the foreseeable future for drinking; or the yield of the aquifer is so low that pumping groundwater for public or domestic uses is highly unlikely. In these situations, monitoring for some period of time will help demonstrate that the contamination will not impact human health or the environment. Minnesota allows this option, and Ohio has proposed a rule change that would allow it under some circumstances.

Scenario 4: The implementing agency does not require additional corrective action. An UST removal or closure report may be enough to document that human health and the environment are protected if the contamination was excavated during tank closure. An exposure or risk assessment can be used to demonstrate that no further action is needed to protect human health and the environment. In addition, no further action is appropriate if the contamination does not exceed action levels established by the implementing agency. Illinois and other states have incorporated this policy into their programs.

CONCLUSIONS

To meet our mandate for protecting human health and the environment from hundreds of thousands of releases requiring corrective action, more state and local agencies need to embrace regulatory innovations, improved technologies, and streamlined administrative processes. This directive identifies several opportunities for streamlined implementation of the federal release response and corrective action regulations based on their flexibility. Each option will not be appropriate for all programs; however, many other opportunities for streamlining exist that are not explicitly mentioned in this directive.

A few programs that have worked aggressively at streamlining for several years have made some dramatic improvements. Their experience proves that cleanups can be started and completed much more rapidly. They also have demonstrated that it is possible to provide effective oversight at a large number of sites while reducing red tape and paperwork. Finally, many states have reaped significant benefits from communicating and working more effectively with their "suppliers and customers"—contractors, consultants, tank owners, and operators. However, even in the most advanced programs, additional improvements (e.g., cost reductions) are possible and necessary in order to meet the programs' goals with the resources that are likely to be available.

This directive, in itself, will not be adequate to stimulate the needed innovations and improvements. It is essential for both Headquarters and Regional UST program offices to promote streamlining aggressively and to lead by example, using streamlined approaches whenever possible. However, the success of the program depends primarily on the states and other implementing agencies. EPA will provide all possible support to help them meet the many challenges posed by the large number of UST corrective actions.

Reporting Requirements in the Federal Release Response and Corrective Action Regulations

Section of Regulation	Report	Submittal Schedule
280.61(a)	Initial Response	Within 24 hours of release confirmation or within another reasonable time period determined by the implementing agency
280.62(b)	Initial Abatement	Within 20 days of release confirmation or within another reasonable time period determined by the implementing agency
280.63(b)	Initial Site Characterization	Within 45 days of release confirmation or another reasonable time period determined by the implementing agency
280.64(d)	Free-Product Removal	Within 45 days of confirming a release unless directed to do otherwise by the implementing agency
280.65(a)	Investigation for Soil and Groundwater Cleanup	Report as soon as practicable or in accordance with a schedule set by the implementing agency
80.66(a)	Corrective Action Plan	As required by the implementing agency after the Initial Site Characterization report
280.66(c)	Results Monitoring and Evaluation	As directed by the implementing agency