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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5

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**To:** RCRA Corrective Action Staff

**From:** Robert Springer, Director (signed)  
Waste, Pesticides and Toxics Division

**Subject:** Guide to Performance-Based RCRA Corrective Action

### Introduction

The Waste, Pesticides and Toxics Division (WPTD) initiated an effort to streamline and accelerate RCRA corrective action in October 1998. We had concluded that corrective action should be efficient and less process-driven. WPTD has implemented a series of changes and intends to continue its streamlining initiative. This initiative has had several successes and has led us to an understanding of how corrective action can be made more efficient. Our goal is to ensure that facilities control risks to human health and the environment as quickly and effectively as possible, and continue the effort through the completion of corrective action. The purpose of this Guide is to express a set of implementation principles that will form the foundation for all of our RCRA corrective action decisions.

This Guide builds on the foundation of program flexibility that has been encouraged through national guidance and the 1999 RCRA Reforms. The RCRA corrective action program has matured to the point where review and approval of implementation activities conducted by many facility owner/operators (O/O) can be made simpler and more efficient. The U.S. Environmental Protection Agency Region 5 (Agency) has provided extensive policy and guidance to enable the regulated community to understand what level of implementation performance is expected. For selected facilities, we believe formal Agency involvement can be limited to a few crucial decision points. By reducing time-consuming and repetitive formal document reviews, revisions and approvals, the Agency and O/Os can devote more resources to improve communications and to expedite corrective action.

A performance-based approach will provide more implementation flexibility throughout corrective action. This approach should also foster an effective professional working relationship between WPTD, the O/O and their consultant(s). We are confident that a performance-based approach to RCRA corrective action, using real time practical decision making, will not only reduce the time needed to complete corrective action, but also will increase the efficiency and cost effectiveness of the overall RCRA corrective action process.

### Elements of the Performance-Based Process

To date our efforts to evaluate corrective action have identified certain essential elements:

- Development of a concise history and status report for the facility in the form of a Current Conditions Report

- Development of a Conceptual Site Model, that is a constantly evolving working hypothesis of potential sources, risks, data needs, cleanup objectives and corrective action solutions that can be used as an effective implementation tool
- Information and Data Collection Planning based on the above two elements, in order to focus the overall corrective action effort on those releases that may pose an unacceptable risk to human health and the environment
- Facility Investigation to confirm what is known about a facility and to fill data gaps
- Development and implementation of appropriate Interim Measures while final Corrective Measures are established
- Evaluation of Corrective Measures and Selection of a remedy to address the identified environmental risks presented by the facility
- Implementation of the Selected Corrective Measure(s) including appropriate operation and maintenance of the remedy
- Confirmation and certification of successful completion of RCRA corrective action

We have determined that, even though all of these essential elements must be completed, four regulatory decision points are central to satisfactory completion of RCRA corrective action. These decision points are:

- Determination that the two Government Performance and Results Act (GPRA) Environmental Indicators have been successfully achieved
- Evaluation of Corrective measure alternatives and selection of the Final Corrective Measure(s)
- Planning and scheduling implementation of the selected Corrective Measure(s)
- Determination and certification of successful completion of the RCRA corrective action

In order to ensure these four corrective action decisions have a solid foundation, Agency or state staff must have confidence in the quantity and quality of the data collected, and in particular, that sampling and data analysis under the essential element of facility investigation have been conducted with adequate quality assurance. WPTD intends, except as discussed in the Selection Criteria Section below, to limit its formal decision making to the above four decision points. It is therefore critical that the O/O ensure that the data provided to the Agency meets the WPTD QA/QC Policy. Corrective measure alternatives must be based on a thorough understanding of releases to the environment and any contaminant migration that may have occurred. Because the Agency has transferred greater responsibility and flexibility to the O/O by removing many of the traditional approval requirements, this understanding can best be achieved through use of the conceptual site model and effective information exchange established through a relationship built on trust and mutual respect.

### **Implementation of Corrective Action Elements**

RCRA corrective action is primarily environmental risk management. It is intended to identify and confirm current and potential environmental risks, to gather data through facility investigation, and then to select a remedy that will eliminate, to the extent possible, the hazards to human health and the environment. Several important features of performance-based corrective action are cross-cutting in nature and therefore affect all stages of the process. These features are:

1. **Iterative Nature:** It must be recognized that the various elements or phases of corrective action should be implemented in an iterative manner. This is in contrast to the more traditional system which calls for a series of clearly defined steps that are often carried out in a rigid order. Thus, for example, under the traditional system, a) all investigative work would be performed during the RCRA Facility Investigation (RFI) which often ends with a formal risk assessment, b) the process would move to the Corrective Measures Study (CMS), which in turn c) would lead to the selection of the entire facility remedy, d) then move to the design and construction of the remedy in the Corrective Measures Implementation (CMI) phase, and e) any Interim Measures identified during the process would require formal proposal, design and approval.

A performance-based approach recognizes that corrective action projects can benefit from more flexible implementation. Corrective action will be more efficient if the various steps are performed in an iterative way, sometimes with overlapping process elements and time frames. For example, the development of a conceptual site model early in the process and the implementation of data collection activities based on this conceptual site model is encouraged. In addition, the performance-based process encourages the implementation of corrective measures as early in the process as possible. This may result in corrective measures being implemented at a portion of the facility while investigation is continuing at a different portion. Likewise, some investigative tasks might be reserved until after the implementation of interim corrective measures in order to determine the need for further cleanup activity or to verify the success of the interim measure. In order to make appropriate corrective measures decisions at any one time, we have determined that data should be gathered and decisions made on an iterative basis to allow flexibility, encourage prompt action and select practical solutions.

2. **Risk Based Decision-Making:** Performing risk analysis is by its nature an iterative process and an example of how corrective action can benefit from fully incorporating these principles. A deliberate objective of risk-based decision-making is to bring forward, as appropriate, risk criteria decisions in order to include them as early as possible in the corrective action process. This practice would enable the project manager, who functions as the risk manager, to make initial risk criteria decisions based on data and information available at the outset in order to guide the nature and extent of the investigative work. Communication among the risk manager, risk assessor, and other interested stakeholders must occur throughout the corrective action effort. Risk analysis and risk management decisions will be conducted throughout the entire corrective action effort. Therefore, a traditional risk assessment, in the sense of preparing a single comprehensive document that once and for all provides a full risk analysis to be used in making all the final remedy decisions, may not be necessary. Making risk criteria decisions early, and as quickly as the data allow for an appropriate choice, will help to focus the corrective action effort on those factors that present the potential threat(s) to human health and the environment.
3. **Data Collection:** The collection of information and data, whether in an initial survey to

prepare a conceptual site model or in a formal investigation to evaluate the conceptual site model, should be carried out in stages that most efficiently match the conditions and needs of each particular facility. The planning and performance of investigative work commonly occurs as in a series of actions, with each phase of the investigation building upon and governed by the results of earlier phases. The facility investigation should be organized to carry out a series of often separate efforts that best fits the conditions of the facility and ensures that an adequate facility-wide investigation is completed. The investigation of one portion of a facility should not necessarily wait for the rest of the current phase of an investigation to be completed for the whole facility. Data collection should proceed to a logical conclusion for each portion of the facility. It is critical for data collection to be focused on those factors that present, or have the potential to present, a risk. Risk management decision-making needs should be the primary driver for all data collection. Therefore, only data that support the corrective action decision process should be collected.

The greatest opportunities to achieve the benefits of streamlining RCRA corrective action occur during the facility investigation, in particular, in the area of data collection. In many instances it is not necessary or beneficial to exercise all of the prescriptive Agency oversight called for in existing permits and orders for the investigation of contamination at a facility. By balancing Agency oversight activities with an increased responsibility on the O/O to do the data collection and to do it right, WPTD believes it is possible to expedite cleanups and focus limited Agency resources.

4. **Stakeholder involvement:** Stakeholders should be identified at the beginning of the corrective action process. Properly managed stakeholder involvement will address the Agency's public participation requirements and enhance the relationship between the facility's O/O, the surrounding community and other individuals or groups that have an interest in the corrective action. Stakeholders should be involved throughout the process, with a communications plan that addresses the needs and circumstances of the stakeholders and O/O of the facility. The communications plan should be modified as needed to reflect developments that occur during the corrective action in order to ensure prompt and accurate information exchange. Stakeholders in the performance-based process include not only representatives of the community surrounding the facility, but also regulatory agency representatives and others who may be impacted by the corrective action.
5. **Owner/Operator responsibility:** Successful implementation of corrective action requires that an effective level of confidence and cooperation be established between the affected O/O's, the regulatory officials responsible for the facility, and other stakeholders. One of the key assumptions implicit in this Guide is that the responsible O/Os have sufficient knowledge, competence and integrity to assume expanded responsibility and the flexibility to implement RCRA corrective action without compromising the results. The O/O's ability to implement corrective action with significantly reduced oversight depends on whether the ultimate standards that govern the effort are clearly established or can be effectively determined for the facility. On an iterative basis, the O/O should evaluate, investigate and remediate a contaminated facility in accordance with a functionally driven process and schedule appropriate to the facility conditions.

WPTD recognizes that not all policy issues related to RCRA corrective action have been resolved. We intend to continue our efforts to resolve these remaining issues. Nevertheless,

the key to effective performance-based corrective action is continued effort on the part of O/Os and regulatory officials to establish practical solutions to implementation issues.

6. **Transparent and Definitive Process:** It is critical that the corrective action decision process be obvious to the point it is transparent and definitive with no hidden agendas. Determinations made by the O/O or by U.S. EPA should, whenever possible, provide closure to an issue. RCRA corrective action can be a lengthy process. Because GPRA Environmental Indicators determinations are based on current facility conditions, and can be modified to address changes in facility status, they provide an excellent interim decision stage in the corrective action process. The Indicators are achieved when the Agency determines that the facility no longer presents a current risk to human health and when migration of contaminated ground water is controlled. This interim success point will provide assurance that a facility presents no current environmental threat while the RCRA corrective action is completed. A final RCRA corrective action completion determination is particularly important when the facility as a whole, or as determined by the Agency, portions of the facility have achieved the cleanup action levels established for the facility. Similarly, if institutional controls are used as part of corrective action, those controls must be clear, effective and enforceable.

### **Selection Criteria for Performance-Based Corrective Action**

WPTD has developed a performance-based model consent order and voluntary agreement. We are currently using these performance-based models to initiate corrective action at remaining facilities subject to RCRA corrective action. However, we recognize that not all facilities subject to RCRA corrective action will benefit from a change in process. In addition, not all facility O/Os have the interest or capability to implement a performance-based approach. For these facilities a traditional consent or other type of order will be utilized.

WPTD is also evaluating facilities that have already initiated corrective action under a traditional order or permit issued by the Agency to determine which facilities could benefit from a shift to a performance-based approach. In order to ensure O/Os have the knowledge, competence and other factors necessary to effectively participate in this performance-based approach to corrective action, WPTD staff will evaluate each facility scheduled for corrective action to determine the most appropriate implementation mechanism. If identified by the Agency as a potential candidate for this performance-based approach, the O/O of the facility will be contacted to discuss the option of a streamlined approach. WPTD staff will then recommend a mechanism to management for final selection.

O/Os of a facility under a federal traditional order or permit who have an interest in switching to a performance-based approach should contact their project manager. The O/O must define for the project manager why they feel corrective action at their facility would benefit from a change in approach.

WPTD management will then select facilities where this performance-based approach could be used based on appropriate, including criteria:

- The current status of the corrective action mechanism based on: a) how much of the process has been completed, and b) how the change in approach would result in implementation improvements.
- The implementation improvements that will result from the change in approach.



- The facility O/O's demonstration of financial and technical capability to implement a performance-based approach.
- The compliance and corrective action performance history of the facility's O/O.
- The O/O's degree of commitment to expedite corrective action.

## Conclusion

Effective implementation of a corrective action that promptly addresses environmental concerns requires the Agency to provide adequate tools for implementation. We now have two approaches to corrective action implementation: 1) the traditional process and 2) the performance-based approach outlined in this Guide. This Guide establishes an alternative to the traditional approach to corrective action for those facilities administered by WPTD. It also reinforces the direction of the RCRA Corrective Action Reforms issued by OSWER Assistant Administrator Tim Fields in July 1999 to instill greater flexibility and practicality in our overall implementation of RCRA corrective action. We recognize that program improvement is an ongoing effort. We intend to monitor this approach and to modify it as appropriate in order to continue our efforts to streamline RCRA corrective action.

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