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FB2000

ENTERED

Reading Mailed 2/21/00 cmg

February 21, 2000

Mr. David Dodge
DERA Program Manager
Directorate of Environment
ATZC-DOE (200)
Department of the Army
Headquarters, U.S. Army Air Defense Artillery Center and
Fort Bliss
1733 Pleasonton Road
Fort Bliss, TX 79916-6816

RE: *GPRA Goals at Fort Bliss*
EPA ID No.: NM4213720101

Dear Mr. Dodge:

The Hazardous and Radioactive Materials Bureau (HRMB) of the New Mexico Environment Department is responding to your letter of November 18, 1999 in which your asked several questions relating to the determination of the two Environmental Indicators (EIs) at Fort Bliss. I would like to first provide a general overview of the Government Performance and Results Act (GPRA), followed by a brief discussion of the two Environmental Indicators and the RCRA GPRA Baseline. Secondly, I will address your specific questions, listed as "a" through "e" in your letter of November 18, 1999.

GPRA OVERVIEW

Enacted in 1993, the Government Performance and Results Act (GPRA) holds federal agencies accountable for achieving program results. The GPRA requires departments and agencies to clearly describe the goals and objectives of their programs, identify resources and actions needed to accomplish these goals and objectives, develop a means of measuring their progress, and regularly report on their achievements. In response to the

requirements of the GPRA, EPA has developed GPRA goals, updated its strategic plan, and constructed a new accountability system.

Although final cleanup is still the ultimate goal at all RCRA Corrective Action sites, EPA has determined that the highest near-term priority of the Corrective Action Program is to make sure that human exposures and ground water migration are under control at as many sites as possible before moving on to final cleanup.

ENVIRONMENTAL INDICATORS

EPA's RCRA Corrective Action Program has developed two Environmental Indicators (*Current Human Exposures under Control* [CA725] and *Migration of Contaminated Groundwater under Control* [CA750]) to measure the Corrective Action Program's progress. The Environmental Indicators (EIs) are designed to aid site decision makers by clearly showing where risk reduction is necessary. Focusing on the EIs should help reduce delays in the review of cleanup work plans and allow owner/operators and regulators to concentrate on those problems that potentially pose significant risks.

In an effort to accelerate corrective action at RCRA facilities, EPA has set a goal of having 95% of these facilities to have human exposures controlled (CA725), and 70% to have groundwater releases controlled (CA750) by the year 2005.

RCRA GPRA BASELINE

As part of EPA's *"RCRA CleanUp Reforms"* initiative, a RCRA GPRA Baseline of 1712 RCRA facilities nationwide was published on July 8, 1999. The purpose of the baseline is to track the Corrective Action Program's workload and progress. This baseline was developed from the 1991 National RCRA Corrective Action Priorities Initiative and input from the States. The National Corrective Action Prioritization System (NCAPS), based on information in each facility's RCRA Facility Assessment (RFA) report, was the principal mechanism EPA used to determine the relative priority for facility cleanup. The initial NCAPS rankings for most facilities were generated from 1991 through 1993.

The 1712 facilities listed in the RCRA GPRA Baseline have been identified as facilities where early cleanup progress is a first priority. Of the 1712 facilities nationwide on the RCRA Cleanup Baseline (as of mid-1999): 373 have met the Human Exposure Environmental Indicator (CA725), 309 have met the Groundwater

Migration Environmental Indicator (CA750), and 255 facilities have met both of the environmental indicators.

This baseline is a tool for tracking the Corrective Action Program's workload and progress and, therefore, must remain consistent to have value for this purpose. Therefore, EPA has determined that facilities will not be "removed" from the baseline. However, when it is verified that a facility meets both environmental indicators, they will be added to a separate grouping of facilities that have met their near-term Corrective Action obligations.

LETTER OF NOVEMBER 18, 1999

a. What specific sites and what specific findings need to be addressed?

All Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) specified in Fort Bliss' HSWA Permit, as modified by the Department's letter of December 21, 1999, must be considered when determining the status of the two Environmental Indicators. The RCRA GPRA Baseline report of July 8, 1999, which included Fort Bliss, is a "snapshot" of current conditions at each facility. EPA's determination for each EI at Fort Bliss was that there was not sufficient information available to determine that each EI was "under control".

b. What is/are the definitions of what is expected at these sites?

Please see EPA's February 5, 1999 "*Interim-Final Guidance for RCRA Corrective Action Environmental Indicators*" (Attachment 1). This guidance is used to determine if a facility has met the two existing EIs; however, it does not address how to meet the two EIs. Fort Bliss can only meet the two EIs when all "human exposures and ground water migration are under control" at all SWMUs/AOCs. For example, this can only occur when all releases from all SWMUs/AOCs have been characterized completely and it has been determined that any and all contamination from any and all releases pose no "unacceptable" risk for all pathways considered. Otherwise, a determination that "more information needed" or that current human exposures are "not under control" must be entered.

What EPA and HRMB "expect" is that between now and 2005, substantial progress will be made in Fort Bliss' Corrective Action Program; releases will be characterized, risk analyses will be performed, and appropriate interim measures will be implemented to stabilize releases.

c. What is/are the standards for measurements of progress to realization of the EPA EI?

As noted above in our response to question "b" above, progress in the Corrective Action Program at Fort Bliss will be measured by the timely completion of the RFI/CMS/CMI phases at all SWMUs and AOCs. HRMB reviews progress at each facility, include Fort Bliss, continually, and as noted above, the EIs must be revised appropriately to reflect progress made in the Corrective Action Program. When sufficient information has been generated, HRMB will reevaluate the EIs at Fort Bliss and, if appropriate, will change the status to reflect progress achieved (i.e. the status codes will be changed to "YE").

d. Is the criteria the entire installation or individuals site(s)?

Unfortunately, the EIs apply facility-wide; therefore, at facilities with many SWMUs/AOCs, such as at Fort Bliss, it will naturally be more difficult to achieve the EIs quickly.

e. How does the EPA's apparent schedule of 2005 relate to the schedule of the Department of Defense agreed to with the EPA of 2007 for "high" risk sites and additional years to resolve "medium" and "low" risk sites.

HRMB is unfamiliar with the referenced agreement and suggests that Fort Bliss contact EPA directly with this question.

I am also attaching copies of other GPRA and EI related documents for your reference. The summary overview given above is based on these documents. If you have any additional questions concerning EPA's GPRA goals, EIs, or Fort Bliss' Corrective Action Program, please call me at 505-827-1558 (extension 1024).

Sincerely,

Glenn von Gonten,
Geologist III

Attachments

cc without attachments:
David Neleigh, EPA Region 6
Steve Pullen, NMED-HRMB

// Signed 2/5/99 //

MEMORANDUM

SUBJECT: Interim-Final Guidance for RCRA Corrective Action Environmental Indicators

FROM: Elizabeth Cotsworth, Acting Director
Office of Solid Waste

TO: RCRA Senior Policy Managers
Regions I-X

The RCRA corrective action program and achievement of its Government Performance Results Act (GPRA) goals are of highest priority for the national RCRA program. The RCRA program is using two Environmental Indicators (EI) to measure program performance for GPRA purposes: (1) Current Human Exposures Under Control (CA725), and (2) Migration of Contaminated Groundwater Under Control (CA750).

With this memorandum I am transmitting revised guidance on how to determine if a facility has met the RCRA corrective action Environmental Indicators (EI). This Interim-Final guidance will replace the existing EI guidance (from 1994 and 1995) and will remain the working guidance for at least one year. The Interim-Final guidance is similar to the earlier guidance but has been modified to facilitate more consistent determinations (across regions and states) and to be more explicit with regard to the minimum level of documentation required to ensure that the determinations will be verifiable.

This guidance has been developed with the cooperation and input of representatives from all ten EPA regions and at least one state from each region. The guidance is in the form of questions to be answered in making an EI determination. The questions and answer options express the minimum criteria for EI determinations and are not to be modified for regional, state or site-specific conditions. The "Rationale" portion of the forms can be filled in to explain unique situations to any length necessary. While the signed hard-copies of these forms should reside in the facility's administrative files, these forms should also be kept in electronic format that can be posted on an "EI database" web site to be developed by the Office of Solid Waste in the near future. The "EI database" will help communicate successes and provide examples for overcoming barriers to progress.

Thank you for your assistance with this important effort. If you have any questions, please call Bob Hall or Henry Schuver of my staff at (703) 308-8432 or 308-8656 respectively.

Attachment

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: _____
Facility Address: _____
Facility EPA ID #: _____

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   _____ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	___	___	___	_____
Air (indoors)[2]	___	___	___	_____
Surface Soil (e.g., <2 ft)	___	___	___	_____
Surface Water	___	___	___	_____
Sediment	___	___	___	_____
Subsurf. Soil (e.g., >2 ft)	___	___	___	_____
Air (outdoors)	___	___	___	_____

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

_____ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

	Potential **Human Receptors** (Under Current Conditions)						
Contaminated Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	____	____	____	____			____
Air (indoors)	____	____	____				
Soil (surface, e.g., <2 ft)	____	____	____	____	____	____	____
Surface Water	____	____			____	____	____
Sediment	____	____			____	____	____
Soil (subsurface e.g., >2 ft)				____			____
Air (outdoors)	____	____	____	____	____		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

_____
_____
_____
_____
_____

[3] **Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)**

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5 Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

____ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the _____ _____ facility, EPA ID #_____, located at _____ under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature)_____ Date _____
(print)_____
(title)_____

Supervisor (signature)_____ Date _____
(print)_____
(title)_____
(EPA Region or State)_____

Locations where References may be found:

_____
_____
_____
_____
_____

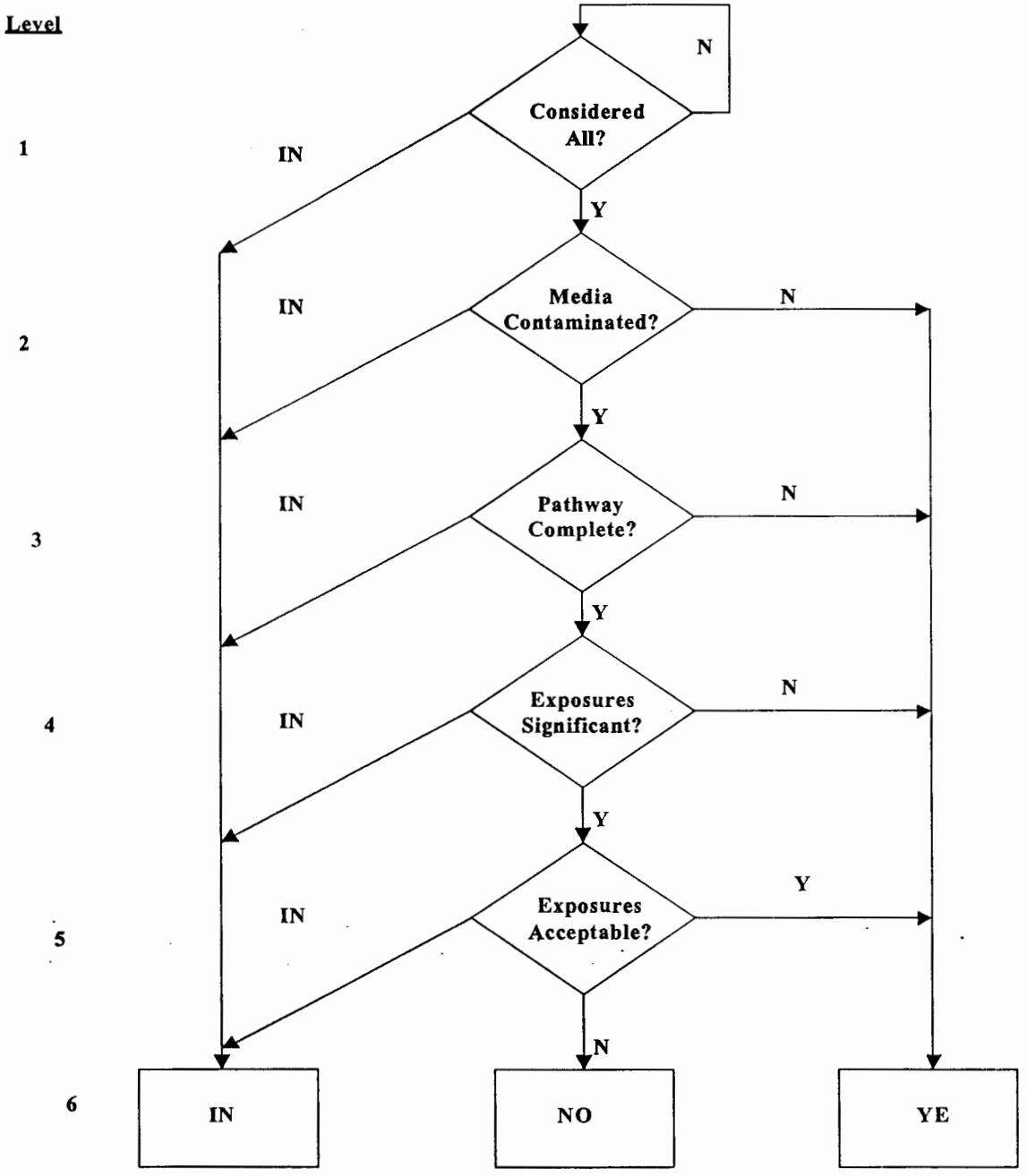
Contact telephone and e-mail numbers

(name) _____
(phone #) _____
(e-mail) _____

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

Facility Name: _____
EPA ID#: _____
City/State: _____

CURRENT HUMAN EXPOSURES UNDER CONTROL (CA 725)



DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: _____
Facility Address: _____
Facility EPA ID #: _____

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   _____ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available, skip to #8 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_____ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

_____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and
Reference(s):_____

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and
Reference(s):_____

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and
Reference(s):_____

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and
Reference(s):_____

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and
Reference(s):_____

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

_____ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the _____ _____facility, EPA ID # _____, located at_____. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by (signature)_____ Date _____
(print)_____
(title)_____

Supervisor (signature)_____ Date _____
(print)_____
(title)_____
(EPA Region or State)_____

Locations where References may be found:

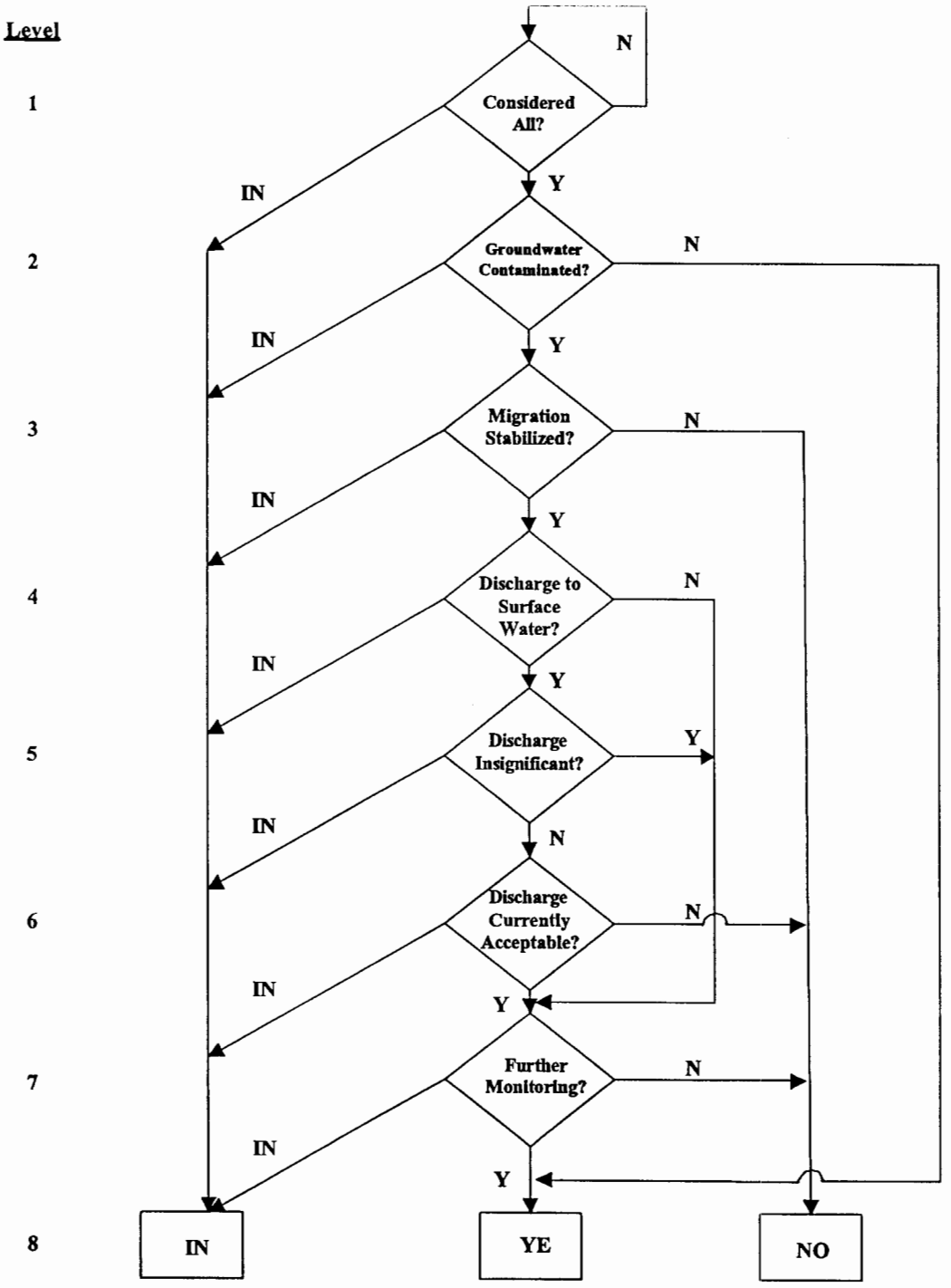
_____
_____
_____
_____
_____

Contact telephone and e-mail numbers

(name)_____
(phone #)_____
(e-mail)_____

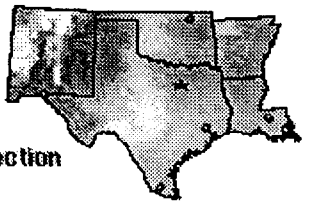
Facility Name: _____
EPA ID#: _____
City/State: _____

MIGRATION OF CONTAMINATED GROUNDWATER UNDER CONTROL (CA 750)



7/12/1999

EPA United States Environmental Protection Agency



REGION 6
Arkansas Louisiana New Mexico Oklahoma Texas

Multimedia Planning and Permitting Division

RCRA Cleanup Baseline

As part of EPA's RCRA CleanUp Reforms initiative, a Baseline of 1700+ RCRA facilities nationwide was published on July 8, 1999.

GPRA (Government Performance Results Act)

In an effort to accelerate corrective action at RCRA facilities, the GPRA has set a goal of having 95% of these facilities to have human exposures controlled, and 70 % to have groundwater releases controlled by the year 2005. These goals will provide a measurement of the progress of corrective action for all RCRA facilities and will be represented by the following environmental indicators: CA 725 for Human Exposures Controlled, and CA 750 for Groundwater Releases Controlled. These codes will be entered into the RCRA Information System (RCRIS) database by EPA and the States when RCRA facilities have reached these goals.

Background

The Baseline was developed from the National RCRA Corrective Action Priorities Initiative and input from the States. This initiative was in 1991 and initial rankings for most facilities were generated in 1991 through 1993. Corrective action is required for releases of hazardous waste or constituents from solid waste management units (SWMUs) at hazardous waste treatment, storage, or disposal facilities. Most facilities were ranked based on information in the RCRA Facility Assessment (RFA) report. The ranking took into account: 1) type and design of the waste management unit, 2) volume of waste, 3) waste toxicity, and 4) likelihood of a release to the environment. Other factors included: 1) depth to groundwater, 2) groundwater use, 3) distance to surface water, 4) nearest drinking water intake, 5) nearest sensitive environment, and 6) nearby population. The RCRA Baseline was then checked against a list of facilities in the corrective action workload universe in RCRIS. This universe is calculated using the status of regulated units and corrective action activities which have occurred.

Current Status

Many RCRA facilities are in the process of conducting corrective action. Some facilities have made substantial progress in their cleanup efforts, and may have met the environmental indicator measures (CA725/CA750). Determinations were made based on information provided on the CA725/CA750 forms in PDF format. (To get a free copy of the PDF Reader click here. After downloading the PDF reader to your computer, click on any pdf file, and tell the browser the path to the acroread.exe file that was downloaded from

Adobe's Web Page). Other facilities that have not yet met the environmenal indicators may have made substantial progress through stabilization. For further information on the current status of RCRA facilities in Region 6, see attached table.

Questions and Answers

1. What are these facilities and how did EPA develop the RCRA Cleanup Baseline?

EPA developed the RCRA Cleanup Baseline in conjunction with the states as a result of a mandate in the Government Performance & Results Act (GPRA) requiring EPA to measure and track program progress. The purpose of the baseline is to track our workload and progress in corrective action. Most of the 1712 facilities were identified in the early 1990's when EPA and the states were prioritizing their corrective action workload, and were identified as facilities where early cleanup progress was appropriate.

Since being included in the early 1990's, many facilities have made progress in their cleanup efforts. 255 facilities have met both environmental indicators (CA 725/Human Exposures Controlled, and CA750/Groundwater Releases Controlled), and at some of these facilities cleanup is complete. Many of the facilities that have not yet met the environmental indicator measures have still made substantial progress by stabilizing problems or in some cases beginning final remedies. At other facilities, corrective action has either not begun or is proceeding at varying rates. To find out the actual status and situation at a given facility, we strongly encourage the public to contact the authorized state or EPA Region.

2. How did EPA and the states determine that these facilities were a priority?

The National Corrective Action Prioritization System (NCAPS) is the principal mechanism EPA used in the early 1990's to determine the relative priority for facility cleanup. This system is a management tool that takes multiple factors into account, including: whether there has been an observed release; toxicity of contaminants; contaminant characteristics that relate to fate and transport; aquifer, surface water and rainfall parameters; characteristics of waste management units, amount of waste; and receptor characteristics (e.g., whether groundwater is being used). This scoring allows the oversight agencies to assess the relative potential of facilities to pose a threat to human health or the environment. The oversight agency then categorizes each facility as being of High, Medium, or Low priority for focusing Agency oversight.

The NCAPS system is different than the Hazard Ranking System used in Superfund, but it does consider many of the same factors. NCAPS scores do not equate to the Superfund Hazard Ranking System (HRS).

3. How is the RCRA Corrective Action Program different from the Superfund Program?

The RCRA Corrective Action program addresses facilities that at one time or another treated, stored, or disposed of hazardous wastes and, therefore, were subject to RCRA permitting requirements. There are approximately 3500 industrial sites nationwide that must undergo cleanup to satisfy the RCRA corrective action program. EPA and the states have identified approximately 1700 facilities for the RCRA Cleanup Baseline from this 3500.

EPA's Superfund has much broader authority to address both regulated facilities as well as

hazardous substance releases from abandoned and inactive facilities, spills, illegal dumping, etc. The Agency's policy is to use Superfund to complement regulatory programs, focusing Superfund resources on problems that are not otherwise being addressed. There are currently about 1,300 proposed and final sites on the Superfund National Priorities List.

4. How many of the facilities nationwide have met the environmental indicators?

Of the 1712 facilities nationwide on the RCRA Cleanup Baseline: 373 have met the Human Exposure Environmental Indicator 309 have met the Groundwater Migration Environmental Indicator, 255 facilities have met both of the environmental indicators.

5. Can there be more than one regulatory authority at these facilities?

Yes. We have noted that at some of these facilities there are areas where both Superfund and RCRA Corrective Action authorities are being used in the cleanup. Also, many of these facilities also must comply with the Clean Air Act, Clean Water Act, Toxic Substances Control Act, and other state or local authorities. Federal facilities may have to comply with their own authorities.

6. How can facilities get off the baseline?

This baseline is a tool for tracking EPA/State workload and progress and therefore must remain consistent to have value for this purpose. Therefore, facilities will not be "removed" from the baseline. However, when it is verified that a facility meets both environmental indicators, they will be added to a separate grouping of facilities that have met their near-term Corrective Action obligations. There are 255 such facilities nationwide in this grouping now.

7. Is there a safety/health concern at any of the RCRA Cleanup Baseline facilities?

EPA and the States have performed an initial assessment at all 1712 facilities. Where immediate threats are identified, swift emergency action is taken to stabilize, mitigate or eliminate the near term threats to human health and the environment. Stabilization of near-term threats has been conducted at more than 800 facilities. Examples of stabilization activities include removal of contaminated soil or capping exposed contamination with a thick protective cover of clay, and installing groundwater remediation systems.

In addition to stabilization activities, detailed investigations have been initiated at 1100 of these facilities and completed at 500. Still, a significant amount of assessment and actual remediation work remains to ensure that any long-term threats to health or the environment are addressed. The reforms announced on July 8, 1999, will ensure that this work moves forward expeditiously and with a focus on environmental results.

EPA is committed to ensuring public safety at all corrective action facilities and keeping the public informed about cleanup decision-making at these sites. The public can request information about specific facilities from an authorized state or EPA's Regional contacts.

8. Why did EPA and the States choose these 2 environmental indicators?

The RCRA Program developed the Environmental Indicators (EIs) guidance to help focus

program activities on observable, near term improvements in environmental conditions (i.e., Results) that were site-wide and to de-emphasize procedural (i.e., the Process), document-based, or partial-facility milestones of program progress. These EIs are being used to measure program progress under the Government Performance and Results Act.

These indicators address two of the program's highest near-term priorities.

The protection of human health by preventing current exposures to contamination (via cleanup of contaminated media and/or the use of exposure controls to prevent unacceptable exposures) is clearly one of the Corrective Action Program's highest near-term priorities.

The protection of environmental resources by preventing the further spread of contamination, in the most significantly contaminated and mobile media (i.e., groundwater), is also one of the highest near-term priorities of the Corrective Action Program.

9. Does Superfund use these same indicators?

The Superfund program is currently using several performance measures and three environmental indicators to document its progress in protecting people and the environment. Each is a set of indicators to measure 1) Populations protected from immediate threats, 2) Attainment of incremental clean up goals, and 3) Volumes of waste handled by treatment and containment technologies. Two additional Superfund indicators are being developed to provide more specific information on risk reduction and ecological protection. The two programs are working together to determine which environmental indicators both programs can use for the same purpose.

10. Do you have any environmental indicators concerning the protection of ecosystems, endangered species, wetlands, etc.?

We are considering developing additional indicators. We would like to get additional feedback from our stakeholders on developing additional measures to assess our protection of ecosystems, etc.

11. The GPRA goals are in terms of stabilizing the situation at sites. Why isn't EPA pursuing final cleanup at each of these sites? Are these sites ever going to be completely cleaned up?

Final cleanup is the ultimate goal at all RCRA Corrective Action sites, but it makes sense from an environmental and human health standpoint to make sure that human exposures and groundwater migration are under control at as many sites as possible before moving on to final cleanup.

Two hundred and fifty five (255) sites nationwide have moved beyond stabilization and have met the environmental indicators and are on their way to final cleanup.

12. Why is EPA releasing the RCRA Cleanup Baseline at this time?

The public has a right to know what we are doing to address the cleanup of these facilities.

13. How accurate is the baseline?

We believe that the RCRA Cleanup Baseline information is as accurate as possible, given that by definition this information is constantly changing to reflect changes in cleanup status and program progress. EPA regions and the states recently completed a significant upgrading and updating of the Baseline information so we are confident that it is a reasonably accurate SNAPSHOT of environmental indicator status at the baseline facilities. At the same time, one of the purposes of this announcement is to encourage more activity by regulators and industry to document and verify that the environmental indicators (EI) have been met, so we hope that the EI information will change at a rapid rate.

For Further Information, Contact:

EPA: Cathy Gilmore - Enforcement - 214.665.6766 or Email at: gilmore.cathy@epa.gov
EPA: Laurie King - RCRA Permitting - 214.665.6792 or Email at: king.laurie@epa.gov
EPA: William Gallagher - RCRA Permitting - 214.665.6775 or Email at: gallagher.william@epa.gov
EPA: Matt Loesel - 214.665.8544 or Email at: loesel.matt@epa.gov
Arkansas Department of Environmental Quality: Daniel Clanton - 501.682.0834
Louisiana Department of Environmental Quality: Narendra Dave - 225.765.0361
Oklahoma Department of Environmental Quality: Don Barrett - 405.702.5142
New Mexico Environment Department: James Bearzi - 505.827.1567
Texas Natural Resource Conservation Commission: Ata Rahman - 512.239.2276

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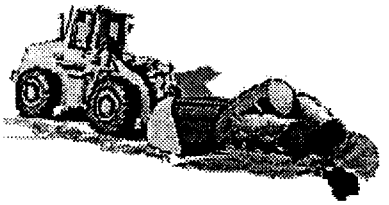
URL: http://www.epa.gov/earth1r6/6pd/rcra_c/pd-o/rcrabase.htm
Last Updated: July 12, 1999 - Metadata Record
Number of Accesses since July 12, 1999: 01097

Enacted in 1993, the Government Performance and Results Act (GPRA) places new management expectations and requirements on federal agencies by creating a framework for more effective planning, budgeting, program evaluation, and fiscal accountability for federal programs. The intent of GPRA is to improve public confidence in federal agency performance by holding agencies accountable for achieving program results. Departments and agencies must clearly describe the goals and objectives of their programs, identify resources and actions needed to accomplish these goals and objectives, develop a means of measuring their progress, and regularly report on their achievements. This approach will also serve to improve congressional decisionmaking by clarifying and stating program performance goals, costs, and results "up front."

EPA developed a system for planning, budgeting and accountability, based upon the GPRA framework, which will provide the information and structure for EPA and its stakeholders to make more informed decisions on environmental priorities and the strategies that can best achieve those results. Key system implementation efforts include developing EPA goals, updating the Agency strategic plan, guiding the development of performance plans, analyzing the process and criteria by which the Agency determines its priorities, and constructing a new accountability system.

10/12/1999

Waste Cleanup



Corrective Action for Hazardous Waste Professionals

Background on Cleanup and the Office of Solid Waste (OSW)

OSW is responsible for both ensuring that currently generated solid waste (hazardous and nonhazardous waste) is managed properly, and that currently operating management facilities address any contaminant releases from their operations. To ensure that currently generated wastes are properly managed, Congress passed the Resource Conservation and Recovery Act (RCRA) in 1976. Congress amended RCRA in 1984 with the Hazardous and Solid Waste Amendments (HSWA) to require the cleanup of contamination in the environment from improper waste management practices prior to the passage of RCRA and from potential future releases. HSWA requires responsible parties that are seeking a permit to treat, store, or dispose of hazardous wastes (TSDs) to clean up environmental contaminants at their sites regardless of the time of the release. This cleanup at TSD facilities is termed **RCRA Corrective Action**.

RCRA's Corrective Action Program

Accidents or other activities at RCRA facilities (or TSDFs) have sometimes released hazardous waste pollutants into soil, ground water, surface water, and air. The Corrective Action Program allows the RCRA facilities to address the investigation and cleanup of these hazardous releases themselves. There are approximately 3700 facilities that are in the corrective action workload. The degree of investigation and subsequent Corrective Action necessary to protect human health and the environment varies significantly among facilities. When EPA determines that state programs are equivalent to the federal RCRA program, the corrective action program is delegated to the state. At this

time 33 states are authorized to run their own Corrective Action Program. For more information see the state authorization process - *(Adobe Acrobat PDF* file)*.

How is Corrective Action Different from Superfund?

OSW's hazardous waste cleanup program, referred to as the Corrective Action Program, is different than Superfund because it deals with sites that have viable operators and on-going operations. Superfund was primarily designed to remedy the mistakes in hazardous waste management made in the past at sites that have been abandoned or where a sole responsible party cannot be identified. Cleanup at Superfund sites is primarily paid for by the Superfund Trust Fund with money derived mainly from taxes on the chemical and petroleum industries. The Corrective Action Program encompasses active, or soon to be active facilities, that are permitted or seek a permit to treat, store, or dispose of hazardous waste. As a condition for obtaining a RCRA operating permit, these active facilities are required to clean up contaminants that are released or have been released in the past. RCRA facilities must pay for the cleanup at their site. For more information see the **Superfund Program web site**.

Entering the Corrective Action program

One of the keys to understanding the RCRA Corrective Action Program is knowing how a facility becomes subject to the Corrective Action process. There are three primary ways a Treatment, Storage, and Disposal Facility becomes subject to the Corrective Action process:

1. A TSD facility that is seeking a permit to operate must ensure, through the Corrective Action process, that there are no unacceptable releases from past waste management activities.
2. EPA may issue an *enforcement order*, because of high priority contaminant releases, requiring a facility seeking a permit to implement Corrective Action.
3. A facility owner/operator may volunteer to perform Corrective Action by entering an agreement with EPA in order to expedite the process.

In addition, accidental releases from facility operations are addressed by Corrective Action.

RCRA Cleanup Reforms

Since 1984, EPA and authorized states have made considerable progress in implementing the Corrective Action requirements. Despite the progress made, states, environmental groups, and the regulated community have raised concerns, including: slow progress in achieving cleanup or other environmental results; an emphasis on process and reports over actual work in the field; unrealistic, impractical or overly conservative cleanup goals; and lack of meaningful public participation.

Because of various reasons raised by many stakeholders, the Agency believes that it is time for a fundamental re-evaluation of its Corrective Action Program. This re-evaluation comes in the form of the RCRA Cleanup Reforms. For more information on RCRA Cleanup Reforms see the RCRA Cleanup Reforms - (Adobe Acrobat PDF*[28KB] file) || ASCII text file. © 7/1999

Environmental Indicators

While the ultimate goal of RCRA Corrective Action is to achieve final cleanups, we measure the near-term success of the program and reforms against the Government Performance and Results Act (GPRA) goals and annual cleanup targets for getting current human exposures controlled and migration of contaminated groundwater under control to minimize risk. Measuring and recording our progress toward these goals will be a top priority for EPA and the States over the next several years.

The two corrective action Environmental Indicators, Current Human Exposures Under Control and Migration of Contaminated Groundwater Under Control, are measures of program progress and are being used to meet the goals set under the (GPRA). New EI guidance was issued in February 1999 and describes how EPA and the States should determine if these measures have been met. [click here to view new guidance (PDF format [52KB])].

These Environmental Indicators are designed to aid facility decision makers by clearly showing where risk reduction is necessary, thereby helping regulators and facility owner/operators reach agreement earlier on stabilization measures or cleanup remedies that must be implemented. Focusing on the Environmental Indicators should also help reduce delays in the review of cleanup work plans and allow owner/operators and regulators to concentrate on those problems that potentially pose significant risks.

RCRA Cleanup Baseline

EPA developed the RCRA Cleanup Baseline in conjunction with the states as a result of a mandate in the Government Performance & Results Act (GPRA) requiring EPA to measure and track program progress. There are 1712 facilities on the RCRA Cleanup Baseline.

The two near-term measures of progress in the RCRA Corrective Action Program are known as Environmental Indicators. The Environmental Indicators for the RCRA Corrective Action Program are "migration of contaminated groundwater under control" and "current human exposures under control".

Most of the 1712 facilities were identified in the early 1990's when EPA and the states were prioritizing their corrective action workload, and were identified as facilities where early cleanup progress would be appropriate. Today, many of these facilities have already made progress in their cleanup efforts. Some of these facilities have met the environmental indicator measures, and at some of these facilities cleanup is complete. Many of the facilities that have not yet met the environmental indicator measures have still made substantial progress by stabilizing problems or in some cases beginning final remedies. Approximately 35% of the 1,712 facilities have not yet been assessed by EPA or the states for EI determinations. When assessed, it may be determined that some facilities may currently meet EI measures. At other facilities, corrective action has either not begun or is proceeding at varying rates. [click here to view the RCRA Cleanup Baseline] - (Adobe Acrobat PDF file[211KB])

Note that there is a lag time (about 2-3 months) between the time

Environmental Indicators are certified as achieved at a facility and when that information becomes publicly available via this website. For more information on the cleanup status of an individual facility, please refer to the EPA and State contact list. (Hot link to contact list)

The company names found on the list are the current facility owners. There may be companies on this baseline that are the current property owner but did not cause the contamination. There may also be cases where the former owners have entered an agreement to be responsible for the cleanup. Unfortunately, this database is unable to track and identify these instances.

Baseline Facilities with Environmental Indicator Determinations

Meeting the corrective action GPRA goals is the highest priority of the national RCRA program. We are using two Environmental Indicators to measure near-term program performance and to reach these goals. The environmental indicators are the "migration of contaminated groundwater under control" and "current human exposures under control."

Verifying that "exposures are controlled" and "groundwater releases are controlled" are important measures that can be achieved in a variety of ways, such as by stabilizing the source of contamination (for instance, capping soil contamination with a thick layer of clay) or by implementing a final cleanup remedy for the problem. Achieving these measures is an important cleanup milestone for each facility. However, there still may be additional work necessary to complete final cleanup. Facilities are expected to continue stabilization and cleanup activities until they meet the final cleanup objectives for the facility.

To meet an EI determination means that there are no unacceptable pathways of exposure or contamination at the facility. This list of facilities shows those on the RCRA Cleanup Baseline that have met both EIs. [click here to view list of Baseline Facilities with EI Determinations]

Contacts for Facility Specific Information

The Contacts for Facility Specific Information provides a list by state of individuals and their phone numbers to contact if you have facility-specific questions. For general questions about the RCRA Cleanup Reforms, please contact the RCRA Hotline at 1(800)424-9346.

Corrective Action Enforcement

The National Hazardous Waste Enforcement Program is managed by EPA's Office of Enforcement and Compliance Assurance.

RCRA Public Participation

Public participation plays an integral role in all RCRA programs, including Corrective Action. The RCRA Public Participation Manual provides a clear description of the many public participation activities that are required by federal regulations as well as pointing out steps you or your organization can take to provide more public input into the

process.

Other EPA Waste Cleanup Efforts

In addition to OSW's waste clean up efforts, you may wish to investigate the following waste clean up programs throughout EPA:

Underground Storage Tanks: Cleaning Up UST Releases EPA has been tasked with establishing programs that would prevent, detect, and clean up releases from underground storage tanks (USTs). EPA regulations require UST owners and operators to respond to a release by reporting it, removing its source, mitigating fire and safety hazards, investigating the extent of the contamination, and cleaning up soil and ground water as needed to protect human health and the environment.

Oil Spills: Despite the nation's best efforts to prevent spills, almost 14,000 oil spills are reported each year, mobilizing thousands of specially trained emergency response personnel and challenging the best-laid contingency plans. Although many spills are contained and cleaned up by the party responsible for the spill, some spills require assistance from local and state agencies, and occasionally, the federal government. EPA is the lead federal response agency for oil spills occurring in inland waters, and the U.S. Coast Guard is the lead response agency for spills in coastal waters and deep water ports.

The Cleanup of Federal Facilities: Federal Facilities Restoration and Reuse: Across the country, thousands of federal facilities are contaminated with hazardous waste, unexploded ordnance, radioactive waste, fuels, and a variety of other toxic contaminants. These facilities include many different types of sites, such as abandoned mines, nuclear weapons production plants, fuel distribution areas, and landfills. To overcome the difficulties posed by contamination at federal facilities, EPA's Federal Facilities Restoration and Reuse Office (FFRRO) works with DoD, DOE, and other federal entities to help them develop creative, cost-effective solutions to their environmental problems. FFRRO's overall mission is to facilitate faster, more effective, and less costly cleanup and reuse of federal facilities.

Hazardous Waste Cleanup Information Web Site: Technology Innovation Office:
The Hazardous Waste Cleanup Information Web Site is intended as a forum for anyone interested in waste cleanup (remediation) and contains information on policies, programs, organizations, publications and databases useful to regulators, consulting engineers, technology developers, researchers, and remediation contractors. The site contains technology descriptions and reports as well as current news on business aspects of waste site remediation (clean up) and links to other sites important to managers interested in site characterization and soil and ground water remediation technologies.

Get Acrobat Reader * Some of the documents provided by EPA are in an Adobe Acrobat PDF (Portable Document Format) file. They can be viewed, and printed, with the use of an Adobe Acrobat Reader. The Adobe Acrobat's Reader is available, free, for Unix, Macintosh, IBM DOS and IBM Windows operating systems. Click this button to download the latest version of Adobe Acrobat. The readers are available directly from Adobe.

URL: http://www.epa.gov/epaoswer/osw/cleanup.htm
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