



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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FROM: Jim Grassiano *JWG*
Industrial Facilities Section
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SUBJECT: Evaluation of Solutia's status under the RCRIS Corrective Action
Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: ALD 004 019 048

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Solutia's status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS):

- 1) Current Human Exposures Under Control (CA725),
- 2) Migration of Contaminated Groundwater Under Control (CA750).

Concurrence by the Departments Hazardous Waste Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing at the appropriate location within Attachments 1 and 2.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the second evaluation for Solutia's Anniston, Alabama facility. The first evaluation was completed on April 5, 1996. The conclusions are the same in this latest memo; however, the EI codes were re-evaluated and re-established based on a significant amount of new and updated information, as referenced herein.



III. FACILITY SUMMARY

Site Location Description

Solutia is a chemical manufacturing facility located in Calhoun county in the city of Anniston in northeastern Alabama. Topographically, the facility is located in Section 12, Township 16 South, Range 7 East (W 85° 51' 30" Longitude and N 33° 39' 30" Latitude). The plant site totals roughly 530 acres and is generally situated approximately 700-800 feet above mean sea level. The plant is located near the eastern ridge of the Alabama Valley and Ridge physiographic province. The topography of the area is characterized by northeastward trending valleys paralleled by ridges and mountains.

Production Processes

Solutia presently manufactures para-nitrophenol, polyphenyl, and a proprietary heat transfer fluid called Therminol 59. Historically, a variety of organic and inorganic chemicals have been produced at Solutia, formerly known as Monsanto Corporation. These historical plant operations have included biphenyl; ferro-manganese, ferro-silicon, and ferro-phosphorous compounds; parathion, and phosphorus pentasulfide. Other intermediate compounds and production based constituents have also been produced at the facility, which has been in operation since 1917. For example, a caustic-chlorine process was operated from the 1950's to 1969 to produce chlorine for Monsanto's former PCB manufacturing operation. In total, PCB's were manufactured at the site from the late 1920's until 1971.

Surrounding Land Use

The 530 acre facility is composed of four main tracts that are contiguous but which are bisected by Highway 202 to the south and the Norfolk-Southern railroad to the north. Clydesdale avenue bisects the east and west sides of the plant. Additional smaller tracts of land have been acquired in recent years. These parcels are generally located on the northeast side of the facility and include several former industrial and residential parcels of various sizes. Some are contiguous with plant property and some are not.

The plant site is generally bordered by residential areas immediately to the east and north of the plant; residential areas to the west; industrial areas to the northwest; and public and private forest/wildlife management areas to the south (in and around Coldwater Mountain).

Wastes Generated and Permit Status

Solutia is a generator of hazardous waste. It also holds an Alabama Hazardous Waste Management and Minimization Act (AHWMMA) Permit. Among other things, this permit outlines corrective action activities that Solutia must implement to address various Solid Waste Management Units (SWMUs) and RCRA Waste Management Areas (WMAs). The facility has two WMAs which were closed prior to permit issuance. Under the permit, Solutia is required to implement certain post-closure monitoring and remediation activities. Hence, the AHWMMA permit is also known as the facility's Post-Closure Permit.

Presently, all production related wastes are shipped off-site for disposal. At one time, the facility operated two on-site landfills. These are known as the South Landfill (SLF) and West End Landfill (WEL), respectively. The SLF was comprised of ten cells over its operational life. Seven of these cells were operational before the effective date of RCRA. These pre-RCRA cells are collectively designated as SWMU No. 1 in Solutia's Post-Closure permit. Two of the cells became operational in a post-RCRA timeframe; and thus these two former landfill cells were designated as Waste Management Area No. 1 (WMA-I) upon closure under Solutia's Closure/Post-Closure Permit.

The other landfill (i.e., the WEL) is designated as SWMU 47 in Solutia's Post-Closure permit. This landfill was operated from approximately 1930 to 1960 and consists of one cell.

Over the life of each landfill, production wastes were disposed in each cell, although the quantity and type of waste varied significantly. It is known that, prior to remediation and closure of the WEL, PCB wastes were known to have been released from the landfill as surface seepage (i.e., leachate to the ground surface).

In 1989, WMA-I was closed with a RCRA compliant cap. The remaining cells comprising SWMU-1 were covered with natural clay and vegetative cover. In early 1997, Solutia installed a multi-media cap at the WEL to prevent future releases.

The permit also addresses numerous other SWMUs and another RCRA-designated area known as the Old Limestone Bed Surface Impoundment. This former surface impoundment area is designated as WMA-II.

Because of past landfill and impoundment use, groundwater at the facility has been shown to be impacted by organophosphorus pesticide (i.e., parathion), para-nitrophenol, PCBs, and possibly other Constituents of Potential Concern (COPC).

IV. CONCLUSION FOR CA725

Based on the preceding information and the information in the attachments to this document, off-site human exposure is not completely controlled for soil and sediment. Thus it is recommended that **CA725 NO** be entered into RCRIS.

V. CONCLUSION FOR CA750

Based on the preceding information and the information in the attachments to this document, all groundwater contamination at or emanating from the facility is believed to be controlled. Thus it is recommended that **CA750 YES** be entered into RCRIS.

VI. SUMMARY OF FOLLOW-UP ACTIONS

Numerous activities are presently underway to evaluate plausible human exposures and control them to the extent necessary to protect human health. There are several attachments to this memorandum that explain the ongoing level of effort regarding the off-site investigation into potential PCB and mercury contamination.

These actions are being taken under the RCRA/HSWA program to alleviate human exposures to contaminated soil and sediment, in addition to lowering contamination levels of edible fish tissue in the receiving water ways (Snow Creek, Choccolocco Creek, Lake Logan Martin). Presently, there are several phases of RFI/CS investigations underway. Most significantly, there is a major off-site RFI/CS effort underway to evaluate PCB and mercury levels in sediment and fish tissue samples collected from the aforementioned water bodies. This study is scheduled to continue until approximately June 2000. At that time, it may be feasible to begin imposing appropriate action (i.e., corrective measures) to reduce human health exposure concerns. Alternatively, or perhaps in conjunction with corrective action activities, a follow-up RFI/CS study may be warranted to complete the investigation phase of this wide-ranging study into roughly 40 miles of the Choccolocco Creek/Coosa River basin.

In addition to the sediment/fish tissue study, an off-site evaluation of contaminated soil areas is set to commence in the summer of 2000. This will be another phase of the Off-Site RFI/CS. It is anticipated that this study will take one year to complete.

The ATSDR also plans to obtain available blood serum PCB data from a group of several hundred citizens that are designated plaintiffs in an ongoing civil suit. Based upon its review of this data, ATSDR may recommend that additional blood sampling be conducted and/or it may be able to quantify risk levels for nearby Anniston Residents.

In light of the many outstanding studies that are ongoing and the extensive size of the off-site area to be investigated, it is anticipated that the *negative indicator will reach a Yes (i.e., it is projected that CA725 will reach YE) in fiscal year 2004*

Attachments: 1. CA725: Current Human Exposures Under Control
 2. CA750: Migration of Contaminated Groundwater Under

ATTACHMENT I

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA725)
Current Human Exposures Under Control

Facility Name: Solutia, Inc.
Facility Address: 300 Birmingham Hwy, Anniston, AL 36201
Facility EPA ID #: ALD 004 019 048

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).

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS Event Code (CA725)**

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)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			Para-Nitrophenol, Parathion, PCBs, mercury
Air (indoors) ²		X		No exposure believed present
Surface Soil (e.g., <2 ft)	X			PCB contamination is wide spread
Surface Water		X		No present releases to surface water other than non-contact cooling
Sediment	X			Sediment (PCB, Mercury) contamination of receiving water ways
Subsurface Soil (e.g., >2 ft)	X			PCB Contamination present > 2 ft on-facility property.
Air (outdoors)			X	PCBs detectable near fence-line and off-site at near 0.08 ug/cu.meter. Data are under evaluation by a risk assessor at this time.

- _____ 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.
- X 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.

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).

²Recent 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.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS Event Code (CA725)

Rationale and Reference(s): To the review the nature and extent of on-site contamination (PCBs, para-nitrophenol, parathion, etc), see the RFI/CS Report dated January 1999 and associated revisions/notices of deficiency. The nature and extent of Off-Site contamination is presently under evaluation per the off-site RFI/CS Workplan (revision 2 dated February 1999). Adjacent residential soil areas are also known to be contaminated with PCBs at various levels significantly above background levels. These nearby off-site areas, known as areas "A, B, C, and D" were sampled in 1996 under the terms of an administrative consent order (Number 96-054-CHW). In addition to these nearby residential areas, there is reportedly PCB contamination in residential areas located more remotely from the plant. ADEM and EPA are presently coordinating to determine the available approaches to investigate and, if necessary, remediate these remotely located residential soil areas.

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS Event Code (CA725)**

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 <u>Human Receptors</u> (Under Current Conditions)							
<u>“Contaminated” Media</u>	<u>Residents</u>	<u>Workers</u>	<u>Day-Care</u>	<u>Construction</u>	<u>Trespassers</u>	<u>Recreation</u>	<u>Food³</u>
<u>Groundwater</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>
<u>Air (indoors)</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>
<u>Soil (surface, e.g., <2 ft)</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>
<u>Surface Water</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>	<u>N/C</u>
<u>Sediment</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>
<u>Soil (subsurface, e.g., >2 ft)</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>Yes</u>
<u>Air (outdoors)</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>

Instructions for Summary Exposure Pathway Evaluation Table:

1. For Media which are not “contaminated” as identified in #2, please strike-out specific Media, including Human Receptors’ spaces, or enter “N/C” for not contaminated.
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 assigned spaces in the above table. 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).
- X 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): See Response to Question 4 below.

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

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS Event Code (CA725)**

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): In 1996, the Alabama Dept of Public Health conducted an exposure investigation for an adjacent community (known as the Cobbtown/Sweet Valley Community) to evaluate potential public health concerns. Approximately 103 people in the community had their blood screened for PCBs. PCBs were detectable at levels ranging from undetectable to 303 ug/L. Twenty-eight people had levels exceeding 20 ug/L, the level found in 95% of the U.S. population (Ref: August 1, 1996 Health Consultation Letter). Additional adjacent and remotely located residential areas are presently under evaluation, based on recent surface soil sampling conducted by EPA and local citizen’s groups.

At this time, ADPH and ATSDR are completing a health assessment based on residential soil data collected in 1996 in response to an Administrative Consent Order. Issuance of the health assessment is anticipated shortly. Residential contact with surface soil may be significant, considering potential uptake during home gardening and other activities. Also, off-site sediment from local waterways is believed to be impacted by PCB contamination. As a result of off-site sediment contamination, fish tissue samples are known to be contaminated in Snow Creek, Choccolocco Creek and Lake Logan Martin. The nature and extent of sediment contamination is still under investigation at this time.

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): See the attached summary of activities for this site.

⁴If 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.

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS Event Code (CA725)**

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) James W. Grassiano Date 9/20/99
James W. Grassiano
Environmental Engineer, Industrial Facilities Section

Supervisor (signature) Stephen A. Cobb Date 9/20/99 ⁵
Stephen A. Cobb
Chief, Hazardous Waste Branch
Alabama Department of Environmental Management

Locations where References may be found:

ADEM Hazardous Waste Permit File for Solutia's Anniston Facility, Calhoun County, ALD 004 019 048.

Attached is a site map depicting on-site SWMUs and corrective action systems. Also attached are several figures and tables from the Phase 1 RFI/CS Workplan for Off-Site activities. Figure 1 depicts the extent of the study area for investigating PCB contamination within portions of the Coosa River Basin. Table 2 lists the extent of media sampling (soil, sediment, fish, surface water) that is presently under way to determine the extent of off-site PCB and mercury contamination within receiving waters up to and including Lake Logan Martin. Also attached are two narrative summaries of all investigation and cleanup activities completed or initiated at Solutia. One summary addresses activities from approximately 1990 through January 1999. The other summary covers recent activities since January 1999.

Contact telephone and e-mail numbers

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⁵FINAL 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.

Attachment 2

**Documentation of Environmental Indicator Determination
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)
Migration of Contaminated Groundwater Under Control**

Facility Name: Solutia, Inc.
Facility Address: 300 Birmingham Hwy, Anniston, AL 36201
Facility EPA ID #: ALD 004 019 048

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).

**RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)**

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): The August 1999 Semi-Annual Groundwater Detection Monitoring and Corrective Action Report indicates that on-site groundwater continues to be contaminated with various semi-volatile compounds, organophosphorus pesticides, metals, and PCB constituents. Examples cited in the report include: 4-nitrophenol (OW-19 up to 1300 ug/L); parathion (MW-20A up to 3.9 ug/L; OW-24 up to 200 ug/L); tetraethyldithiopyrophosphate (MW-20A up to 3.3 ug/L); 2,4,6-trichlorophenol (MW-20A up to 35 ug/L); o,o,o-triethylphosphorothioate (MW-20A at up to 53 ug/L); pentachlorophenol (MW-20A at up to 160 ug/L); cobalt (OW-19 up to 350 ug/L, OW-19 up to 280 ug/L), mercury (several wells at 1.0 ug/l); and several PCB constituents (Arochlor 1242 at 40 ug/L in OW-21).

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.

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).

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.

**RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)**

5. Is the discharge of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the maximum concentration³ 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 concentration³ 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) providing 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 concentration³ 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 concentrations³ greater than 100 times their appropriate groundwater "levels," providing 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 identifying if there is evidence that the amount of discharging contaminants is increasing.

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

Rationale and Reference(s): N/A

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

**RCRA Corrective Action
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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 implemented⁴)?

_____ 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): N/A

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?"

⁴Note, 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.

⁵The 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.

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- 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): The facility will continue to monitor groundwater at the site under its Post-Closure RCRA Permit. In addition to the groundwater extraction wells associated with the four corrective action systems, there are numerous observation wells, point of compliance wells, and boundary wells in operation at Solutia. These monitoring wells are sampled semi-annually to monitor the progress of remediation and to ensure that contaminated groundwater does not migrate off-site and reach potential human or ecological receptors.

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 Solutia facility, EPA ID # ALD 004 019 048, located in Anniston, Calhoun county, Alabama. 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.

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Completed by (signature) *James W. Grassiano* Date: 9/20/99

James W. Grassiano
Environmental Engineer, Industrial Facilities Section

Supervisor (signature) *Stephen A. Cobb* Date: 9/20/99

Stephen A. Cobb
Chief, Hazardous Waste Branch
Alabama Department of Environmental Management

Locations where References may be found:

ADEM Hazardous Waste Permit File for Solutia's Anniston Facility, Calhoun County, ALD 004 019 048.

Attached is a site map depicting on-site SWMUs and corrective action systems. Also attached are several figures and tables from the Phase 1 RFI/CS Workplan for Off-Site activities. Figure 1 depicts the extent of the study area for investigating PCB contamination within portions of the Coosa River Basin. Table 2 lists the extent of media sampling (soil, sediment, fish, surface water) that is presently under way to determine the extent of off-site PCB and mercury contamination within receiving waters up to and including Lake Logan Martin. Also attached are two narrative summaries of all investigation and cleanup activities completed or initiated at Solutia. One summary addresses activities from approximately 1990 through January 1999. The other summary covers recent activities since January 1999.

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