



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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MONTGOMERY, ALABAMA

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(334) 271-7700

JAMES W. WARR
DIRECTOR

August 21, 2003

BOB RILEY
GOVERNOR

CERTIFIED MAIL # 7003 0500 0001 2706 7543
RETURN RECEIPT REQUESTED

Mr. Marshall Rainwaters
Site Manager
Akzo Nobel Functional Chemicals LLC
LeMoyne Plant
13440 Highway 43 North
Axis, Alabama 36505

Facsimiles: (334)
Administration: 271-7950
General Counsel: 394-4332
Air: 279-3044
Land: 279-3050
Water: 279-3051
Groundwater: 270-5631
Field Operations: 272-8131
Laboratory: 277-6718
Mining: 394-4326
Education/Outreach: 394-4383

RE: Environmental Indicator Evaluations
Akzo Nobel Functional Chemicals LLC
U.S. EPA I. D. No. ALD 008 161 176

Dear Mr. Rainwaters:

The Alabama Department of Environmental Management (ADEM) has recently completed a qualitative evaluation of the environmental conditions at Akzo Nobel Functional Chemicals LLC, in Axis, Alabama. ADEM is pleased to provide you with a copy of the evaluation for your information.

While implementing the permitting requirements of the Alabama Hazardous Wastes Management and Minimization Act (AHWMMA) and the Resource Conservation and Recovery Act (RCRA), as amended by the 1984 Hazardous and Solid Waste Amendments (HSWA), at Akzo Nobel Functional Chemicals LLC, ADEM is always cognizant of its role in protecting human health and limiting further migration of groundwater contamination. As such, the enclosed evaluation covers two specific issues regarding environmental contamination applicable to the facility and local community:

- 1) Plausible human exposure to soil, groundwater, air and surface water contamination at or from the facility, and;
- 2) The continuing migration of contaminated groundwater, both on-site and off-site.

Please note that the purpose of the environmental indicator evaluation is solely to evaluate the status of the two environmental indicators discussed, and that it does not reduce or limit in any way the facility's obligation to perform any monitoring, maintenance, investigation, remediation, or other activity required pursuant to any applicable regulations, permits, or orders.

The enclosed environmental indicator evaluation should not be viewed as somehow separate and distinct from the corrective action activities taken at Akzo Nobel Functional Chemicals LLC. Rather, it is an evaluation of current environmental conditions and a focusing of efforts on potential concerns that ADEM, the facility and interested members of the public must work toward satisfying through implementation of the corrective action process at Akzo Nobel Functional Chemicals LLC.



Mr. Marshall Rainwaters
August 21, 2003
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Therefore, every evaluation should conclude with a projection or outline of future actions to move the facility toward the point where human exposures and/or groundwater releases are controlled. It should be understood that the evaluations operate at the "facility level." In other words, **every area** at the facility must meet the control definition before human exposures or groundwater releases can be considered controlled.

Because many different corrective action documents frequently exist at a facility, ADEM has tried to select the most pertinent documents from which to make its evaluation. The utilized source documents (titles and dates) are explicitly referenced in the evaluation to provide clarity and reproducibility. ADEM recognizes that the potential exists for current conditions at the facility to be somewhat different to that represented in the evaluation. Such discrepancies can be administratively managed during implementation of the ongoing corrective action process and subsequent re-evaluations.

In summary, the evaluation represents a "snap-shot" of the facility's environmental conditions at a particular point in time, and it is a dynamic document subject to revision. Because of the evaluation's focus on current environmental conditions, ADEM views the evaluation as an excellent resource for members of the public as well as the facility. ADEM hopes you find the evaluation useful and informative.

If questions or comments arise regarding this evaluation, please contact Mr. Keith West of my staff at (334) 394-4330.

Sincerely,



Phillip D. Davis, Chief
Industrial Hazardous Waste Branch
Land Division

PDD/KNW/set:Z:2003 08-19 Akzo EI Memo

Encl.: Environmental Indicator Memo

File: Akzo Nobel Functional Chemicals LLC /Mobile/ALD000161176/H/Correspondence



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
JAMES W. WARR
DIRECTOR


August 21, 2003

BOB RILEY
GOVERNOR

MEMORANDUM

TO: Phillip D. Davis, Chief 
Industrial Hazardous Waste Branch
Land Division

THROUGH: Vernon H. Crockett, Chief 
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division

FROM: Keith West 
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division

RE: Evaluation of status of Environmental Indicators for the Akzo Nobel Functional
Chemicals LLC facility in Axis, Mobile, Alabama
USEPA Identification Number ALD 008 161 176

Facsimiles: (334)

Administration: 271-7350
General Counsel: 394-4332
Air: 279-3044
Land: 279-3050
Water: 279-3051
Groundwater: 270-5631
Field Operations: 272-8131
Laboratory: 277-6718
Mining: 394-4326
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I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the status of Akzo Nobel Functional Chemicals LLC, in relation to the following corrective action event codes defined in the RCRAInfo database:

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

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

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

This particular evaluation is the second evaluation performed by the Alabama Department of Environmental Management (ADEM) for the Akzo Nobel Functional Chemicals LLC Axis facility. A previous evaluation was completed by ADEM and EPA, dated June 26, 2000. The evaluation, and associated interpretations and conclusions on contamination, exposures and contaminant migration at the facility are based on information obtained from the following documents:

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- RCRA Facility Assessment (RFA) Report, 04/5/01, revised 2/22/02, and 10/10/02;
- Draft Final Phase I Design Report, Ground-Water Intercept System, Stauffer Chemical Company Sites, Axis and Bucks, Alabama, 06/01/92;
- Final, Decision Document, Stauffer Cold Creek/LeMoyno Sites: Solid Waste Management Units (SWMUs) Evaluation, Operable Unit No. 2, 12/92;
- Final Addendum to the Field Sampling & Analysis Plan and Quality Assurance Project Plan, Cold Creek/LeMoyno SWMUs Evaluation, Operable Unit 2 (12/92), 04/93;
- Draft, Focused Feasibility Study, Stauffer Cold Creek Superfund Site: Operable Unit No. 2, Sources Evaluation, 06/13/94;
- Feasibility Study - Operable Unit No. 2, 06/97; and
- Part B, Post-closure Permit Application, 03/30/98; revised April 23, 1999, January 7, 2000, May 5, 2003, and July 23, 2003.

III. FACILITY SUMMARY

The Akzo facility is located approximately 20 miles north of Mobile, Alabama. The facility currently encompasses approximately 700 acres. The property is bounded by Acordis Cellulosic Fibers Inc. (Acordis) to the south, and to the north by the Syngenta Crop Protection, Inc. Cold Creek Plant and undeveloped property owned by Alabama Power Company. The Mobile River forms the eastern boundary and U.S. Highway 43 is located on the western boundary. The area surrounding the LeMoyno Plant is predominantly industrial, with a few small rural residential communities within a few miles of the site. The production area of the facility, which is fenced, has a 24-hour manned access gate at the entrance. Various portions of the facility are surrounded by locked, chain link fencing. The Akzo facility currently employs approximately 160 people.

Chemical manufacturing operations at the Axis, Alabama facility began in 1953 when the Stauffer Chemical Company purchased the property. Prior to that time, the property was utilized by Southern Alabama Lumber. Between 1953 and 1985, Stauffer Chemical operated the LeMoyno Plant as a multi-product chemical manufacturing facility. Operations began with the construction of a carbon disulfide (CS₂) retort, followed by a reactor CS₂ process in 1956. Several other production facilities were added including a sulfuric acid plant (1957), a carbon tetrachloride plant (1964), a caustic/chlorine plant (1964), a Crystex plant (1974), a metam sodium plant (1984), and the monochloroacetic acid (MCA) production unit which began operation in 1993.

In 1985, Chesborough Ponds purchased Stauffer Chemical and made it a separate division of the company. UniLever subsequently purchased Chesborough Ponds. However, UniLever sold the Chemical Division of Chesborough Ponds (i.e., Stauffer Chemical) to ICI Americas a few months after acquisition. ICI Americas retained the agricultural products division of Stauffer Chemical (i.e., the Cold Creek Plant) and sold the specialty chemical division of Stauffer (i.e., the LeMoyno Plant) within a few months of purchasing it. On August 19, 1987, the LeMoyno plant was purchased by Akzo Chemie America, Inc., now called Akzo Nobel Functional Chemicals LLC.

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Numerous wastes are generated at the Akzo facility and various waste management practices have been implemented in the past fifty years. Wastes generated at the Akzo facility include spent solvents, wastewaters, stormwater, used oils, wastewater treatment sludge, spent batteries, scrap metal, used fluorescent bulbs, used equipment, empty drums, putrescible wastes, biohazardous wastes, general facility wastes, and miscellaneous wastes.

IV. CONCLUSION FOR CA725

The appropriate status code to be entered for RCRAInfo event code CA725 (Current Human Exposures Under Control) is **CA725IN**. Akzo's RCRA Facility Investigation and Confirmatory Sampling Work Plans were received on June 9, 2003. These documents are currently under review by the Department and should provide the information needed on existing SWMU's and AOC's which required further investigation.

V. CONCLUSION FOR CA750

The appropriate status code to be entered for RCRAInfo event code CA750 (Migration of Groundwater Under Control) is **CA750IN**. Akzo's RCRA Facility Investigation and Confirmatory Sampling Work Plans were received on June 9, 2003. These documents are currently under review by the Department and should provide the information needed on existing SWMU's and AOC's which required further investigation.

VI. SUMMARY OF FOLLOW-UP ACTIONS

The Department is currently reviewing Akzo's RFI and CS Work Plans which when approved should provide the information needed on all the SWMUs and AOCs which were identified for further investigation.

VII. ENVIRONMENTAL INDICATOR PROJECT SCHEDULE

RCRAInfo Event Code	Description of Event	Scheduled Date
CA105 and CA140	Work Plan NOD	9/30/03
CA106 and CA150	Work Plan Approved	1/29/04
CA152	Oversight Inspection Conducted	2/30/04
CA109 and CA200	CS and RFI Approved	9/9/04
CA201	EI Memo Prepared	3/4/05
CA725YE	Human Exposures Controlled Determination	3/4/05
CA750YE	Release to GW Controlled Determination	3/4/05

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

KNW/Akzo Nobel Functional Chemicals LLC EI Memo

ATTACHMENT I
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
RCRAInfo Event Code (CA725)
Current Human Exposures Under Control

Facility Name: Akzo Nobel Functional Chemicals LLC
Facility Address: Axis, Mobile, Alabama
Facility EPA ID #: ALD 008 161 176

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

X 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 RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo 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)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater				
Air (indoors) ²				
Surface Soil (e.g., <2 ft)				
Surface Water				
Sediment				
Subsurface 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):

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.

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?

<u>Summary Exposure Pathway Evaluation Table</u> Potential Human Receptors (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>Food¹</u>
<u>Groundwater</u>							
<u>Air (indoors)</u>							
<u>Soil (surface, e.g., <2 ft)</u>							
<u>Surface Water</u>							
<u>Sediment</u>							
<u>Soil (subsurface, e.g., >2 ft)</u>							
<u>Air (outdoors)</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).
- _____ 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):

¹Indirect 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”¹ (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 cannot 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):

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):

¹If 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.

6. Check the appropriate RCRAInfo 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 Akzo Nobel Functional Chemicals LLC EPA ID # ALD 008 161 176, located in Axis, Alabama 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: _____ (date) _____

Keith West
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division

Supervisor: Vernon H. Crockett (date) 8/21/2003

Vernon H. Crockett, Chief
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division

Hazardous Waste:
Branch Chief Phillip D. Davis (date) 21-AUG-03

Phillip D. Davis, Chief
Industrial Hazardous Waste Branch
Land Division

Location where References may be found:

Alabama Department of Environmental Management Main Office
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2059
(334) 271-7700

Contact telephone number and e-mail address:

Keith West
(334) 394-4330
knw@adem.state.al.us

ATTACHMENT 2
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
RCRAInfo Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: Akzo Nobel Functional Chemicals LLC
Facility Address: Axis, Mobile, Alabama
Facility EPA ID #: ALD 008 161 176

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

X 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 RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo 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):

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”⁶).
- _____ 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):

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.

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 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 concentration⁸ 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 concentration⁸ 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 concentrations¹ 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):

¹As 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 implemented¹)?

_____ 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,² appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of trained specialists, including ecologists) 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):

7. Will groundwater monitoring¹ 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):

¹Note, 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.

²The 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.

8. Check the appropriate RCRAInfo 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 Akzo Nobel Functional Chemicals LLC facility, EPA ID # ALD 008 161 176, located at Axis, 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.

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

Completed by: Keith West (date) 8/2/03
Keith West
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division

Supervisor: Vernon H. Crockett (date) 8/2/2003
Vernon H. Crockett, Chief
Engineering Services Section
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Hazardous Waste:
Branch Chief Phillip D. Davis (date) 21-AUG-03
Phillip D. Davis, Chief
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Location where References may be found:

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