

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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August 24, 2001

MEMORANDUM

TO: Stephen A. Cobb, Chief *SA 8/24/01*
Hazardous Waste Branch
Land Division

THRU: Vernon H. Crockett, Chief *VHC 8/24/01*
Industrial Facilities Section
Land Division

FROM: Keith West *KW 8/24/01*
Industrial Facilities Section
Land Division

SUBJ: Evaluation of status under the RCRAInfo Corrective Action Environmental Indicator Event Codes (CA725 and CA750) for the ATOFINA Chemicals, Inc. (ATOFINA Chemicals) facility in Axis, Mobile County, Alabama
EPA I.D. Number: ALD 000 827 154

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I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the ATOFINA Chemicals Axis, Alabama facility's status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Act Information (RCRAInfo) database:

- 1) Current Human Exposures Under Control (CA725),
- 1) 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 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 the ATOFINA Chemicals Axis, Alabama facility (Axis facility). This EI evaluation was prepared by ADEM and ATOFINA Chemicals. A previous evaluation was completed by ADEM, dated September 30, 1997.



III. FACILITY SUMMARY

The ATOFINA Chemicals facility is located in Mobile County in southern Alabama, near Mobile Bay and the Gulf of Mexico. It lies six miles north of Creola, Alabama on U. S. Highway 43. The facility began its production of organotin products in September 1981; additional facilities to produce impact modifiers (IM), octyl mercapto acetate (OMA), and thioglycolic acid (TGA) began operating in the summer of 1985. Products manufacturing at this location include:

1. Tin Tetrachloride, from tin ingots and chlorine gas.
2. Butyl Crudes (a mixture of tetrabutyltin and tributyltin chloride) from tin tetrachloride and tributyl aluminum.
3. Tributyltin chloride, dibutyltin dichloride and monobutyltin trichloride, from the redistribution of butyl crudes with tin tetrachloride.
4. Thioglycolic acid (TGA) from aqueous ammonia, hydrogen sulfide, monochloroacetic acid, and hydrochloric acid.
5. Octyl mercapto acetate (OMA) from octyl alcohol and TGA.
6. Emulsion polymers (impact modifiers, or IM) under the trade names Metablen "C"TM Metablen "P"TM and Durastrength/200 (D-200) Resins.

ATOFINA Chemicals is presently owned by the Elf Aquitaine Group and was formed by the mergers of M&T Chemicals with Pennwalt Corporation and Atochem, Inc. in 1989. This reorganization did not result in changes of ownership or manufacturing operations at the Axis facility.

The facility submitted its Part B Permit Application in June 1984. After several revisions, Federal RCRA/HSWA and State AHWMMMA Permits were issued for Storage Areas 300 and 800 (SWMUs 18 and 19) on September 30, 1985. These permits were modified on September 29, 1986, to include the Former Equalization Basin (SWMU 1) as a RCRA/AHWMMMA regulated surface impoundment.

In August 1986, the U. S. EPA issued a Complaint and Compliance Order against the facility alleging that the monitoring well system at ATOFINA was not sufficient to detect significant amounts of hazardous waste immediately upon release from the Equalization Basin (SWMU 1). The problem arose because of fluctuating groundwater flow directions, which caused the "upgradient" monitoring well to be hydraulically downgradient on occasion.

Following the installation of four monitoring wells in June 1986, a Consent Agreement was finalized and an accelerated groundwater sampling program was implemented. Groundwater monitoring conditions and the installation of an additional monitoring well in the vicinity of Production Well P-1 were also written into the facility's Part B Permit.

The accelerated monitoring program involved five biweekly sampling events and established background data for the background well (MW-5). This work was completed by December 31, 1986. Other groundwater monitoring requirements outlined in the facility's Groundwater Monitoring Plan included 1) semiannual groundwater analysis for pH, total tin, chlorides, phenols, and total dissolved solids (TDS); 2) analysis of samples from the Former Equalization Basin (SWMU 1); 3) annual sampling of Production Well P-1; 4) determining depth to water during every sampling event; and 5) determining groundwater flow rate and direction annually. The Consent Agreement was concluded in February 1987 when the Final Work Production was submitted.

Except for determining depth to water, the facility was in compliance with groundwater monitoring requirements until closure of the Equalization Basin (SWMU 1) began. At that time, ATOFINA suspended groundwater monitoring and temporarily closed monitoring well MW-6.

To comply with the deadline for closure of hazardous waste impoundments specified in the provisions of their Part B Permit, ATOFINA ceased to use the RCRA regulated Former Equalization Basin (SWMU 1) and the Former Stormwater Basin (SWMU 3) in November 1988. Closure activities for these units are as follows:

- Decanted and treated the wastes remaining in the basin through the 800 WWTP;
- Dewatered and excavated the remaining sludge for off-site disposal;
- Excavated and washed gravel and rip-rap for future on-site use;
- Excavated and disposed of concrete, fill dirt, polymeric liner, and sand layer at the nonhazardous Pine Ridge Landfill in Meridian, Mississippi;
- Sampled and analyzed remaining clay liner to determine if clean closure requirements had been met;
- Collapsed dikes to bring basin up to grade.

These activities were completed on July 21, 1989. However, clean closure of the basin could not be certified if releases from the regulated unit were the source of documented groundwater contamination. In order to certify clean closure, the facility submitted an alternate source demonstration in September 1988 to demonstrate to ADEM that units other than the closed equalization basin (SWMU 1) contaminated the groundwater. In these documents ATOFINA stated that the chloroform (up to 45 ppb) and isopropyl ether (up to 315 ppm) contamination originated from the Equalization Basin Lift Station (SWMU 2) and a manhole associated with the 801 Wastewater Pipes (SWMU 29), respectively. ADEM initially accepted the alternate source demonstration for the IPE but not for the chloroform. The alternate source demonstration for chloroform was accepted as part of the closure certification at the time of report preparation. ATOFINA began voluntary corrective action of the chloroform and IPE plumes in April 1987. Use of the Equalization Basin Lift Station (SWMU 2) was discontinued in November 1988; the unit was removed in March 1989. A new production Well P-3 was installed as part of the IPE recovery phase of the corrective action plan. Water from the production well is utilized in the facility's processes. In April 1995 the facility submitted a SWMU Corrective Action Permit Application to ADEM. After two revisions, ADEM issued a SWMU Corrective Action Permit to ATOFINA Chemicals on September 26, 1997.

IV. CONCLUSION FOR CA725

Based on the results of soil sampling and analysis conducted to characterize potential releases from SWMUs and AOCs at the Mobile Plant under the Confirmatory Sampling (CS) and RCRA Facility Investigation (RFI) programs, constituents were not detected above appropriately protective risk-based criteria. The criteria used in evaluating the soil data were those specified in the SWMU Corrective Action Permit for the Mobile Plant and approved in the CS and RFI work plans, consisting of EPA Region 3 Risk-Based Concentrations (RBCs) and RCRA Health Based Criteria for constituents that do not have an RBC developed by EPA Region 3. Based on the analytical results for all the SWMUs and AOCs evaluated during these programs, no constituents were found at concentrations greater than either the residential or industrial risk-based criteria for surface and subsurface soils, except for arsenic.

Arsenic concentrations detected in soil samples collected at the SWMUs investigated during the CS program showed relatively uniform distribution and a limited range of concentrations reported. Based on the arsenic results, a site-specific background soil sampling investigation was conducted during the CS program to determine if the arsenic concentrations detected at certain SWMUs were due to releases from the SWMUs or were representative of ambient arsenic concentrations in soil at the Mobile Plant. Following guidance developed by EPA (Region 4), the background arsenic concentration in soil at the Mobile Plant was established, and all arsenic concentrations detected in CS soil samples were below this background concentration, with one exception (i.e., soil sample collected at SWMU 22). This one single arsenic concentration detected above the background criterion was delineated by surrounding soil samples, all of which showed arsenic concentrations below the facility-specific background arsenic level. In addition, soil throughout SWMU 22, including the location of the sample exceeding the background arsenic criterion, was excavated and removed as a result of physical alterations at this unit.

In an October 26, 2000 letter to ATOFINA Chemicals, ADEM approved the CS Report for the Mobile Plant (dated September 1999), and concurred with ATOFINA Chemicals conclusion that no further action is necessary for the CS SWMUs and AOCs. ATOFINA Chemicals recently conducted the soil sampling specified in the RFI Work Plan (addressing only SWMU 2), and the data collected show that constituent concentrations are also below the applicable residential and industrial risk-based criteria.

V. CONCLUSION FOR CA750

As indicated in Attachment 1 of the Environmental Indicator evaluation for the Mobile Plant (Documentation of Environmental Indicator Determination, CA 725 – Current Human Exposures Under Control), historical and recent sampling conducted at the Mobile Plant confirms that Appendix IX constituents are not present in groundwater at concentrations above risk-based criteria for protection of human health and the environment. Analytical results for groundwater samples collected at the Mobile Plant showed sporadic, low-level detection's of a limited number of Appendix IX constituents (mostly metals reported above laboratory detection limits), and the only organic constituent detected in the samples was chloroform, which was detected in only 21 samples. None of the constituents detected was reported at a concentration that exceeded either MCLs, or, in the case of constituents with no established MCL, other relevant risk-based screening criteria (EPA Region 3 Risk-Based Concentration Table tap water criteria). Additional sampling conducted as part of an alternate source demonstration for closure of the former equalization basin continued to show only sporadic, low-level detection's of chloroform which were continuously below the MCL of 100 µg/l (maximum reported concentration was 45µg/l).

In October 2000, ATOFINA Chemicals obtained additional groundwater samples in accordance with the RFI work plan. Analysis of samples collected from the location of a former lift station for an equalization basin (SWMU 2) showed that the only constituent detected was tin, and the concentration reported was significantly below the applicable risk-based screening criteria (by several orders of magnitude). Chloroform was not detected in the sample obtained from this location.

In addition to the groundwater analytical data collected to date, the results of soil sampling completed at the Mobile Plant under the RCRA Corrective Action Program do not indicate potential impacts to groundwater quality related to constituent concentrations present in soil.

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

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

Facility Name: ATOFINA Chemicals, Inc.
Facility Address: Highway 43, Axis, Mobile County, Alabama
Facility EPA ID #: ALD 000 827 154

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 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		X		
Air (indoors) ²		X		
Surface Soil (e.g., <2 ft)		X		
Surface Water		X		
Sediment		X		
Subsurface Soil (e.g., >2 ft)		X		
Air (outdoors)		X		

 X 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:

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) RCRAInfo Event Code (CA725)

Surface and Subsurface Soil:

Based on the results of soil sampling and analysis conducted to characterize potential releases from SWMUs and AOCs at the Mobile Plant under the Confirmatory Sampling (CS) and RCRA Facility Investigation (RFI) programs, constituents were not detected above appropriately protective risk-based criteria. The criteria used in evaluating the soil data were those specified in the SWMU Corrective Action Permit for the Mobile Plant and approved in the CS and RFI work plans, consisting of EPA Region 3 Risk-Based Concentrations (RBCs) and RCRA Health Based Criteria for constituents that do not have an RBC developed by EPA Region 3. Based on the analytical results for all the SWMUs and AOCs evaluated during these programs, no constituents were found at concentrations greater than either the residential or industrial risk-based criteria for surface and subsurface soils, except for arsenic.

Arsenic concentrations detected in soil samples collected at the SWMUs investigated during the CS program showed relatively uniform distribution and a limited range of concentrations reported. Based on the arsenic results, a site-specific background soil sampling investigation was conducted during the CS program to determine if the arsenic concentrations detected at certain SWMUs were due to releases from the SWMUs or were representative of ambient arsenic concentrations in soil at the Mobile Plant. Following guidance developed by EPA (Region 4), the background arsenic concentration in soil at the Mobile Plant was established, and all arsenic concentrations detected in CS soil samples were below this background concentration, with one exception (i.e., soil sample collected at SWMU 22). This one single arsenic concentration detected above the background criterion was delineated by surrounding soil samples, all of which showed arsenic concentrations below the facility-specific background arsenic level. In addition, soil throughout SWMU 22, including the location of the sample exceeding the background arsenic criterion, was excavated and removed as a result of physical alterations at this unit.

In an October 26, 2000 letter to ATOFINA Chemicals, ADEM approved the CS Report for the Mobile Plant (dated September 1999), and concurred with ATOFINA Chemicals conclusion that no further action is necessary for the CS SWMUs and AOCs. ATOFINA Chemical's recently conducted the soil sampling specified in the RFI Work Plan (addressing only SWMU 2), and the data collected show that constituent concentrations are also below the applicable residential and industrial criteria.

Groundwater:

Historical and recent sampling conducted at the Mobile Plant confirms that Appendix IX constituents are not present in groundwater at concentrations above risk-based criteria for protection of human health and the environment. The risk-based criteria used in evaluating groundwater quality data are the Federal Primary and Secondary Drinking Water Standard Maximum Contaminant Levels (MCLs) or, in cases where there is no MCL established for detected constituents, the tap water value taken from the EPA Region 3 RBCs. Use of these criteria is a conservative measure for groundwater quality data evaluation, as groundwater beneath the plant site is not used as a source for drinking water or sanitary purposes (i.e., showering, washing hands, etc.).

There are nine (9) wells previously used for groundwater monitoring and three (3) production wells (used for process and non-contact cooling water) at the Mobile Plant. The monitoring wells

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

were installed in 1981 (4 wells) and 1986 (5 additional wells) to meet the groundwater monitoring requirements under RCRA for a former wastewater equalization basin, which was closed in 1991. Two of the production wells (i.e., P-1 and P-2) were installed during the initial construction of the Mobile Plant in 1980, and P-3 was installed in 1989. An additional monitoring well is located in the southeast portion of the plant, remote from the other 9 wells, and was sampled on only one occasion.

Groundwater sampling of the monitoring wells and the production wells was conducted periodically between 1982 and 1991, with over 45 separate sampling events conducted. While these events have been varied with regard to frequency and constituents analyzed, a number of the sampling events included analysis for Appendix IX compounds. The results of sampling during these previous events showed only sporadic detections of constituents in a limited number of the monitoring wells. Only limited numbers of volatile organic compounds (VOCs) and metals were detected; semi-volatile organic compounds (SVOCs), pesticides/herbicides, and PCBs were not detected in any of the samples collected for analysis of these parameters. Sampling conducted in June 1987 included full VOCs analysis for the entire 9-well network and analysis for Appendix IX constituents in five of the wells (MW-5 through MW-9). Consistent with earlier sampling results, the data showed sporadic, low-level detections of a limited number of Appendix IX constituents (mostly metals reported above laboratory detection limits), and the only organic constituent detected in the samples was chloroform, which was detected in only 21 samples. None of the constituents detected was reported at a concentration that exceeded either MCLs, or, in the case of constituents with no established MCL, other relevant risk-based screening criteria (EPA Region 3 Risk-Based Concentration Table tap water criteria). Additional sampling conducted as part of an alternate source demonstration for closure of the former equalization basin continued to show only sporadic, low-level detections of chloroform which were always below the MCL of 100 µg/l (maximum reported concentration was 45µg/l).

In October 2000, ATOFINA Chemicals obtained additional groundwater samples in accordance with the RFI work plan. Analysis of samples collected from the location of a former lift station for the equalization basin (SWMU 2) showed that the only constituent detected was tin, and the concentration reported was significantly below the applicable risk-based screening criteria (by several orders of magnitude). Chloroform was not detected in the sample obtained from this location.

In addition to the groundwater analytical data collected to date, the results of soil sampling completed at the Mobile Plant under the RCRA Corrective Action Program do not indicate potential impacts to groundwater quality related to constituent concentrations present in soil.

Surface water/Sediment:

Sampling of soil in the stormwater drainage ditches at the Mobile Plant (collectively designated SWMU 40) during the CS investigation indicated that there are no constituents present in the ditches at concentrations above the applicable screening criteria. In addition, there are no known or suspected releases of constituents from SWMUs or AOCs to surface water.

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Air:

Based on the limited occurrence and low-level concentrations of constituents in soil and groundwater at the Mobile Plant, releases to air are not currently or expected to be observed above appropriately protective risk-based criteria for either indoor (i.e., enclosed buildings/control rooms) or outdoor air. Since the only VOC detected in groundwater that is likely related to a release from a SWMU, chloroform, was present infrequently and at low-concentrations, there are no potential impacts to ambient air related to volatilization of VOCs from groundwater and migration of vapors through the vadose zone to the atmosphere. In addition, the limited number and low concentrations of constituents detected in soil samples obtained during the CS investigation preclude the resuspension (wind erosion) and transport of contaminated soil (i.e., particulate) in air. A comparison of CS and RFI soil sampling data to Region 9 PRGs for industrial soils (which factor potential exposure via inhalation (emissions) and ingestion (particulate) of constituents in soil) show no exceedances of these criteria.

References:

RCRA Facility Investigation Work Plan, November 1998 (Walk Haydel)
CS Report, September 1999
RFA January 1993
EPA Region 3 Risk-Based Concentration Tables
EPA Region 9 Preliminary Remediation Goals

Current Human Exposures Under Control Environmental Indicator (EI) RCRAInfo 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 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. 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.

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

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

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

Rationale and Reference(s): _____

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): _____

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) RCRAInfo Event Code
(CA725)

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):

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

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

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 ATOFINA Chemicals, Inc. facility, EPA ID #ALD 000 827 154, located at Highway 43 in Axis, Mobile County, 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: Keith West Date August 24, 2001
Keith West
Industrial Facilities Section
Hazardous Waste Branch
Land Division

Supervisor: Vernon H. Crockett Date August 24, 2001
Vernon H. Crockett, Chief
Industrial Facilities Section
Hazardous Waste Branch
Land Division

Supervisor: Stephen A. Cobb Date August 24, 2001⁵
Stephen A. Cobb, Chief
Hazardous Waste Branch
Land Division

Locations where References may be found:

Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

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.

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

U.S. EPA Region 4
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Atlanta Federal Center
Atlanta, Georgia 30303

ATOFINA Chemicals, Inc.
Highway 43
Axis, Alabama 36505

ATOFINA Chemicals, Inc.
2000 Market Street, 19th Floor
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ATTACHMENT 2
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: ATOFINA Chemicals, Inc.
Facility Address: Highway 43, Axis, Mobile County, Alabama
Facility EPA ID #: ALD 000 827 154

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 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.

X 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:

As indicated in Attachment 1 of the Environmental Indicator evaluation for the Mobile Plant (Documentation of Environmental Indicator Determination, CA 725 – Current Human Exposures Under Control), historical and recent sampling conducted at the Mobile Plant confirms that Appendix IX constituents are not present in groundwater at concentrations above risk-based criteria for protection of human health and the environment. Analytical results for groundwater samples collected at the Mobile Plant showed sporadic, low-level detections of a limited number of Appendix IX constituents (mostly metals reported above laboratory detection limits), and the only organic constituent detected in the samples was chloroform, which was detected in only 21 samples. None of the constituents detected was reported at a concentration that exceeded either MCLs, or, in the case of constituents with no established MCL, other relevant risk-based screening criteria (EPA Region 3 Risk-Based Concentration Table tap water criteria). Additional sampling conducted as part of an alternate source demonstration for closure of the former equalization basin continued to show only sporadic, low-level detections of chloroform which were always below the MCL of 100 µg/l (maximum reported concentration was 45µg/l).

In October 2000, ATOFINA Chemicals obtained additional groundwater samples in accordance with the RFI work plan. Analysis of samples collected from the location of a former lift station for an equalization basin (SWMU 2) showed that the only constituent detected was tin, and the

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).

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750)
concentration reported was significantly below the applicable risk-based screening criteria (by several orders of magnitude). Chloroform was not detected in the sample obtained from this location.

In addition to the groundwater analytical data collected to date, the results of soil sampling completed at the Mobile Plant under the RCRA Corrective Action Program do not indicate potential impacts to groundwater quality related to constituent concentrations present in soil.

References:

RCRA Facility Investigation Work Plan, November 1998 (Walk Haydel)
CS Report, September 1999
RFA January 1993
EPA Region 3 Risk-Based Concentration Tables
EPA Region 9 Preliminary Remediation Goals

3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"⁶ 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): _____

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) RCRAInfo Event Code (CA750)

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):

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750)

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration⁸ 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 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):

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

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750)

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.

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.

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750)

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

Rationale and
Reference(s): _____

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): _____

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750)

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 ATOFINA Chemicals, Inc. facility, EPA ID # 000 827 154, located at Highway 43, in Axis, Mobile 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.

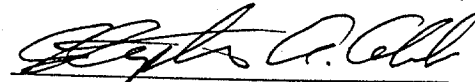
IN - More information is needed to make a determination.

Completed by: Keith West Date August 24, 2001
Keith West
Industrial Facilities Section
Hazardous Waste Branch
Land Division

Supervisor: Vernon H. Crockett Date August 24, 2001
Vernon H. Crockett, Chief
Industrial Facilities Section
Hazardous Waste Branch
Land Division

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750)

Supervisor:



Stephen A. Cobb, Chief
Hazardous Waste Branch
Land Division

Date August 24, 2001

Locations where References may be found:

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Montgomery, Alabama 36110

U.S. EPA Region 4
61 Forsythe Street
Atlanta Federal Center
Atlanta, Georgia 30303

ATOFINA Chemicals, Inc.
Highway 43
Axis, Alabama 36505

ATOFINA Chemicals, Inc.
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Philadelphia, Pennsylvania 19103

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JAMES W. WARR

DIRECTOR

FOB JAMES, JR.

GOVERNOR

September 30, 1997

MEMORANDUM

TO: Wm. Gerald Hardy, Chief *WGH 10/1/97*
Hazardous Waste Branch
Land Division

THROUGH: Stephen A. Cobb, Chief *SAC 9/30/97*
Industrial Facilities Section
Hazardous Waste Branch
Land Division

FROM: Keith West *KNW 9/30/97*
Industrial Facilities Section
Hazardous Waste Branch
Land Division

RE: Evaluation of Elf Atochem North America, Inc.'s Axis, Alabama facility status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA 725 and CA 750).
USEPA Identification Number: ALD 000 827 154

Facsimiles: (334)
Administration: 271-7950
Air: 279-3044
Land: 279-3050
Water: 279-3051
Groundwater: 270-5631
Field Operations: 272-8131
Laboratory: 277-6718
Education/Outreach: 213-4399

I. PURPOSE OF MEMORANDUM

This memo is written to formalize an evaluation of Elf Atochem's Axis, Alabama, facility status in relation to the following RCRIS corrective action codes:

1. Human Exposures Controlled Determination (CA725),
2. Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the EPA Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

Concurrence by the Hazardous Waste Branch Chief is required prior to entering these codes into RCRIS. Dating and signing above satisfies your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations.



II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are five (5) status codes listed under CA750. These status codes are:

1. YE Yes, applicable as of this date.
2. NA Previous determination no longer applicable as of this date.
3. NC No control measures necessary.
4. NO Facility does not meet definition.
5. IN More information needed.

Note that the status codes for CA750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured in terms of a designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every area of contamination at the facility must meet the definition before these event/status codes can be entered.

This particular CA725 evaluation is the first evaluation performed by the Alabama Department of Environmental Management for Elf Atochem North America, Incorporated facility. Because assumptions have to be made as to whether or not human exposures to current media contamination are plausible and, if plausible, whether or not controls are in place to address these plausible exposures. This memo first examines each environmental media (i.e., soil, groundwater, surface water, and air) at the entire facility including any offsite contamination emanating from the facility rather than from individual areas or releases. After this independent media examination is presented, a final recommendation is offered as to the proper CA725 status code for Elf Atochem North America, Inc.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents:

- SWMU Corrective Action Permit, September 1997
- RCRA Facility Investigation Work Plan, July 1995
- RCRA Confirmatory Sampling Work Plan, July 1995
- RCRA Facility Assessment Report, January 1993
- RCRA Operating Permit, September, 1985

III. MEDIA-BY-MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE EXPOSURES

Background

The Elf Atochem North America facility is located in Mobile County in southern Alabama, near Mobile Bay and the Gulf of Mexico. It lies six miles north of Creola, Alabama on U. S. Highway 43. The facility began its production of organotin products in September 1981; additional facilities to produce impact modifiers (IM), octyl mercapto acetate (OMA), and thioglycolic acid (TGA) began operating in the summer of 1985. Products manufacturing at this location include:

1. Tin Tetrachloride, from tin ingots and chlorine gas.
2. Butyl Crudes (a mixture of tetrabutyltin and tributyltin chloride) from tin tetrachloride and tributyl aluminum.
3. Tributyltin chloride, dibutyltin dichloride and monobutyltin trichloride, from the redistribution of butyl crudes with tin tetrachloride.
4. Thioglycolic acid (TGA) from aqueous ammonia, hydrogen sulfide, monochloroacetic acid, and hydrochloric acid.
5. Octyl mercapto acetate (OMA) from octyl alcohol and TGA.
6. Emulsion polymers (impact modifiers, or IM) under the trade names Metablen "C"TM Metablen "P"TM and Durastrength/200 (D-200) Resins.

Elf Atochem North America, Inc. is presently owned by the Elf Aquitaine Group and was formed by the mergers of M&T Chemicals with Pennwalt Corporation and Atochem, Inc. in 1989. This reorganization did not result in changes of ownership or manufacturing operations at the Axis facility.

The facility submitted its Part B Permit Application in June 1984. After several revisions, Federal RCRA/HSWA and State AHWMMMA Permits were issued for Storage Areas 300 and 800 (SWMUs 18 and 19) on September 30, 1985. These permits were modified on September 29, 1986, to include the Former Equalization Basin (SWMU 1) as a RCRA/AHWMMMA regulated surface impoundment.

In August 1986, the U. S. EPA issued a Complaint and Compliance Order against the facility alleging that the monitoring well system at Atochem was not sufficient to detect significant amounts of hazardous waste immediately upon release from the Equalization Basin (SWMU 1). The problem arose because of fluctuating groundwater flow directions, which caused the "upgradient" monitoring well to be hydraulically downgradient on occasion.

Following the installation of four monitoring wells in June 1986, a Consent Agreement was finalized and an accelerated groundwater-sampling program was implemented. Groundwater monitoring conditions and the installation of an additional monitoring well in the vicinity of Production Well P-1 were also written into the facility's Part B Permit.

The accelerated monitoring program involved five biweekly sampling events and established background data for the background well (MW-5). This work was completed by December 31, 1986. Other groundwater monitoring requirements outlined in the facility's Groundwater Monitoring Plan included 1) semiannual groundwater analysis for pH, total tin, chlorides, phenols, and total dissolved solids (TDS); 2) analysis of samples from the Former Equalization Basin (SWMU 1); 3) annual sampling of Production Well P-1; 4) determining depth to water during every sampling event; and 5) determining groundwater flow rate and direction annually. The Consent Agreement was concluded in February 1987 when the Final Work Production was submitted.

Except for determining depth to water, the facility was in compliance with groundwater monitoring requirements until closure of the Equalization Basin (SWMU 1) began. At that time, Atochem suspended groundwater monitoring and temporarily closed monitoring well MW-6.

To comply with the deadline for closure of hazardous waste impoundments specified in the provisions of their Part B Permit, Atochem ceased to use the RCRA regulated Former Equalization Basin (SWMU 1) and the Former Stormwater Basin (SWMU 3) in November 1988. Closure activities for these units are as follows:

- Decanted and treated the wastes remaining in the basin through the 800 WWTP;
- Dewatered and excavated the remaining sludge for off-site disposal;
- Excavated and washed gravel and rip-rap for future on-site use;
- Excavated and disposed of concrete, fill dirt, polymeric liner, and sand layer at the nonhazardous Pine Ridge Landfill in Meridian, Mississippi;
- Sampled and analyzed remaining clay liner to determine if clean closure requirements had been met;
- Collapsed dikes to bring basin up to grade.

These activities were completed on July 21, 1989. However, clean closure of the basin could not be certified if releases from the regulated unit were the source of documented groundwater contamination. In order to certify clean closure, the facility submitted an alternate source demonstration in September 1988 to convince ADEM that units other than the closed equalization basin (SWMU 1) contaminated the groundwater. In these documents Atochem stated that the chloroform (up to 45 ppb) and isopropyl ether (up to 315 ppm) contamination originated from the Equalization Basin Lift Station (SWMU 2) and a manhole associated with the 801 Wastewater Pipes (SWMU 29), respectively. ADEM initially accepted the alternate source demonstration for the IPE but not for the chloroform. The alternate source demonstration for chloroform was accepted as part of the closure certification at the time of report preparation.

Atochem began voluntary corrective action of the chloroform and IPE plumes in April 1987. Use of the Equalization Basin Lift Station (SWMU 2) was discontinued in November 1988; the unit was removed in March 1989. A new production Well P-3 was installed as part of the IPE recovery phase of the corrective action plan. Water from the production well is utilized in the facility's processes. In April 1995 the facility submitted a SWMU Corrective Action Permit Application to ADEM. After two revisions, ADEM issued a SWMU Corrective Action Permit to Elf Atochem North America, Inc. on September 26, 1997.

Groundwater

The water table at Atochem lies 25 to 36 feet beneath the site. Both the Miocene-Pliocene Aquifer and the Alluvial-Coastal Aquifer (along the Mobile River) which underlie the site are capable of yielding a million gallons of water per day to individual wells in the area. The two aquifers act as a single hydrologic unit and are heavily used by local industry. Groundwater monitoring wells are screened at depths of 40 to 50 feet below the surface and production wells are screened 80 to 90 feet below the surface.

The Alluvial-Coastal Aquifer is the source of the facility's drinking and production water. Data obtained from onsite monitoring wells indicates that the aquifer is unconfined in the vicinity of the closed Equalization Basin. The thickness of the saturated zone ranges from 65 to 75 feet.

Rainfall is the major source of aquifer recharge, but only a small percentage infiltrates the subsurface to reach the aquifers. Infiltration is dependent on the permeability and saturated hydraulic conductivity of the soil, as well as the slope of the land and the amount of water already present in the soil. Flat areas underlain by gravel and coarse sand allow more infiltration than steeper slopes underlain by clay. In the vicinity of the facility, recharge is probably restricted to areas where the upper alluvium is thin or absent. Aquifer recharge may also occur at Cold Creek and the reservoir west of the site. Discharge occurs to production wells and the Mobile River, which is thought to be hydraulically connected to the aquifers. Previous groundwater investigations have detected low levels of chloroform in historical groundwater analysis. In October 1986 and January 1987 sampling events, some chloroform was detected in groundwater analyses. On the basis of these results, ADEM requested development and implementation of a compliance-monitoring program for the former Equalization Basin. Atochem began voluntary corrective action of the chloroform and IPE plumes in April 1987. Use of the Equalization Basin Lift Station (SWMU 2) was discontinued in November 1988; the unit was removed in March 1989. A new production Well P-3 was installed as part of the IPE recovery phase of the corrective action plan. Water from the production well is utilized in the facility's processes. In April 1995 the facility submitted a SWMU Corrective Action Permit Application to ADEM. After two revisions, ADEM issued a SWMU Corrective Action Permit to Elf Atochem North America, Inc. on September 26, 1997.

Surface Water/Sediment

The facility is situated approximately two miles west of the Mobile River and 16 miles northwest of Mobile Bay. The topography is generally rolling to flat with elevations ranging from 10 to 50 feet above sea level in the immediate vicinity of the facility and 200 to 300 feet above sea level approximately two to three miles west of the facility. Surface drainage from the facility generally flows east to the Mobile River via Cold Creek, which is situated approximately 1000 feet south of the facility process areas. Cold Creek flows northwest towards the Mobile River. Sisters Creek and an unnamed tributary of Sisters Creek are situated approximately one-half mile north of the facility. The Mobile public water supply canal is situated approximately one mile west of the facility's process areas at elevations greater than 50 feet above sea level. At this time there are no known releases to surface water and/or sediments.

Soil

Geraghty & Miller's 1990 report demonstrated that low levels of chloroform had been detected in some of the subsurface soils in the area immediately adjacent to the former lift station.

No subsurface soil samples have been analyzed to assess the absence or presence of tin in the soils around the lift station. Further investigations of tin in surface and subsurface soils will be undertaken upon the approval of the RFI and CS Work Plans.

Air

Releases to the air from soil, groundwater and/or surface water at this facility is not known or expected to be occurring above relevant action levels.

IV. STATUS CODE RECOMMENDATION FOR CA725:

The routes of human exposure at Elf Atochem's facility include groundwater and soil. At this time there are no known releases that have traveled offsite. However, as explained in the previous sections, human exposures to soil and groundwater are not fully controlled at this facility. Therefore, it is recommended that **CA725 NO** be entered into RCRIS for this facility.

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

This evaluation for CA750 is the first formal evaluation performed for Elf Atochem North America, Inc. Please note that CA750 is based on the adequate control of all contaminated groundwater at the facility. The discussions in Section III are used as the basis for the following recommendation.

VI. STATUS CODE RECOMMENDATION FOR CA750:

Based on data contained in the documents referenced in Section II and summarized in Section III, releases from solid waste management units and/or areas of concern have contaminated groundwater at concentrations above relevant action levels. Because all groundwater contamination at or emanating from the facility is not controlled and this is the first evaluation of Elf Atochem's facility, it is recommended that **CA750 NO** be entered into RCRIS.

File: Elf Atochem/Mobile County/TSD

ADEM



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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JAMES W. WARR
DIRECTOR

DON SIEGELMAN
GOVERNOR

August 24, 2001

MEMORANDUM

TO: Stephen A. Cobb, Chief *AK 8/24/01*
Hazardous Waste Branch
Land Division

THRU: Vernon H. Crockett, Chief *VHC 8/24/01*
Industrial Facilities Section
Land Division

FROM: Keith West *KW 8/24/01*
Industrial Facilities Section
Land Division

SUBJ: Evaluation of status under the RCRAInfo Corrective Action Environmental Indicator
Event Codes (CA725 and CA750) for the ATOFINA Chemicals, Inc. (ATOFINA
Chemicals) facility in Axis, Mobile County, Alabama
EPA I.D. Number: ALD 000 827 154

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

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the ATOFINA Chemicals Axis, Alabama facility's status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Act Information (RCRAInfo) database:

- 1) Current Human Exposures Under Control (CA725),
- 1) 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 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 the ATOFINA Chemicals Axis, Alabama facility (Axis facility). This EI evaluation was prepared by ADEM and ATOFINA Chemicals. A previous evaluation was completed by ADEM, dated September 30, 1997.

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III. FACILITY SUMMARY

The ATOFINA Chemicals facility is located in Mobile County in southern Alabama, near Mobile Bay and the Gulf of Mexico. It lies six miles north of Creola, Alabama on U. S. Highway 43. The facility began its production of organotin products in September 1981; additional facilities to produce impact modifiers (IM), octyl mercapto acetate (OMA), and thioglycolic acid (TGA) began operating in the summer of 1985. Products manufacturing at this location include:

1. Tin Tetrachloride, from tin ingots and chlorine gas.
2. Butyl Crudes (a mixture of tetrabutyltin and tributyltin chloride) from tin tetrachloride and tributyl aluminum.
3. Tributyltin chloride, dibutyltin dichloride and monobutyltin trichloride, from the redistribution of butyl crudes with tin tetrachloride.
4. Thioglycolic acid (TGA) from aqueous ammonia, hydrogen sulfide, monochloroacetic acid, and hydrochloric acid.
5. Octyl mercapto acetate (OMA) from octyl alcohol and TGA.
6. Emulsion polymers (impact modifiers, or IM) under the trade names Metablen "C"TM Metablen "P"TM and Durastrength/200 (D-200) Resins.

ATOFINA Chemicals is presently owned by the Elf Aquitaine Group and was formed by the mergers of M&T Chemicals with Pennwalt Corporation and Atochem, Inc. in 1989. This reorganization did not result in changes of ownership or manufacturing operations at the Axis facility.

The facility submitted its Part B Permit Application in June 1984. After several revisions, Federal RCRA/HSWA and State AHWMA Permits were issued for Storage Areas 300 and 800 (SWMUs 18 and 19) on September 30, 1985. These permits were modified on September 29, 1986, to include the Former Equalization Basin (SWMU 1) as a RCRA/AHWMA regulated surface impoundment.

In August 1986, the U. S. EPA issued a Complaint and Compliance Order against the facility alleging that the monitoring well system at ATOFINA was not sufficient to detect significant amounts of hazardous waste immediately upon release from the Equalization Basin (SWMU 1). The problem arose because of fluctuating groundwater flow directions, which caused the "upgradient" monitoring well to be hydraulically downgradient on occasion.

Following the installation of four monitoring wells in June 1986, a Consent Agreement was finalized and an accelerated groundwater sampling program was implemented. Groundwater monitoring conditions and the installation of an additional monitoring well in the vicinity of Production Well P-1 were also written into the facility's Part B Permit.

The accelerated monitoring program involved five biweekly sampling events and established background data for the background well (MW-5). This work was completed by December 31, 1986. Other groundwater monitoring requirements outlined in the facility's Groundwater Monitoring Plan included 1) semiannual groundwater analysis for pH, total tin, chlorides, phenols, and total dissolved solids (TDS); 2) analysis of samples from the Former Equalization Basin (SWMU 1); 3) annual sampling of Production Well P-1; 4) determining depth to water during every sampling event; and 5) determining groundwater flow rate and direction annually. The Consent Agreement was concluded in February 1987 when the Final Work Production was submitted.

Except for determining depth to water, the facility was in compliance with groundwater monitoring requirements until closure of the Equalization Basin (SWMU 1) began. At that time, ATOFINA suspended groundwater monitoring and temporarily closed monitoring well MW-6.

To comply with the deadline for closure of hazardous waste impoundments specified in the provisions of their Part B Permit, ATOFINA ceased to use the RCRA regulated Former Equalization Basin (SWMU 1) and the Former Stormwater Basin (SWMU 3) in November 1988. Closure activities for these units are as follows:

- Decanted and treated the wastes remaining in the basin through the 800 WWTP;
- Dewatered and excavated the remaining sludge for off-site disposal;
- Excavated and washed gravel and rip-rap for future on-site use;
- Excavated and disposed of concrete, fill dirt, polymeric liner, and sand layer at the nonhazardous Pine Ridge Landfill in Meridian, Mississippi;
- Sampled and analyzed remaining clay liner to determine if clean closure requirements had been met;
- Collapsed dikes to bring basin up to grade.

These activities were completed on July 21, 1989. However, clean closure of the basin could not be certified if releases from the regulated unit were the source of documented groundwater contamination. In order to certify clean closure, the facility submitted an alternate source demonstration in September 1988 to demonstrate to ADEM that units other than the closed equalization basin (SWMU 1) contaminated the groundwater. In these documents ATOFINA stated that the chloroform (up to 45 ppb) and isopropyl ether (up to 315 ppm) contamination originated from the Equalization Basin Lift Station (SWMU 2) and a manhole associated with the 801 Wastewater Pipes (SWMU 29), respectively. ADEM initially accepted the alternate source demonstration for the IPE but not for the chloroform. The alternate source demonstration for chloroform was accepted as part of the closure certification at the time of report preparation. ATOFINA began voluntary corrective action of the chloroform and IPE plumes in April 1987. Use of the Equalization Basin Lift Station (SWMU 2) was discontinued in November 1988; the unit was removed in March 1989. A new production Well P-3 was installed as part of the IPE recovery phase of the corrective action plan. Water from the production well is utilized in the facility's processes. In April 1995 the facility submitted a SWMU Corrective Action Permit Application to ADEM. After two revisions, ADEM issued a SWMU Corrective Action Permit to ATOFINA Chemicals on September 26, 1997.

IV. CONCLUSION FOR CA725

Based on the results of soil sampling and analysis conducted to characterize potential releases from SWMUs and AOCs at the Mobile Plant under the Confirmatory Sampling (CS) and RCRA Facility Investigation (RFI) programs, constituents were not detected above appropriately protective risk-based criteria. The criteria used in evaluating the soil data were those specified in the SWMU Corrective Action Permit for the Mobile Plant and approved in the CS and RFI work plans, consisting of EPA Region 3 Risk-Based Concentrations (RBCs) and RCRA Health Based Criteria for constituents that do not have an RBC developed by EPA Region 3. Based on the analytical results for all the SWMUs and AOCs evaluated during these programs, no constituents were found at concentrations greater than either the residential or industrial risk-based criteria for surface and subsurface soils, except for arsenic.

Arsenic concentrations detected in soil samples collected at the SWMUs investigated during the CS program showed relatively uniform distribution and a limited range of concentrations reported. Based on the arsenic results, a site-specific background soil sampling investigation was conducted during the CS program to determine if the arsenic concentrations detected at certain SWMUs were due to releases from the SWMUs or were representative of ambient arsenic concentrations in soil at the Mobile Plant. Following guidance developed by EPA (Region 4), the background arsenic concentration in soil at the Mobile Plant was established, and all arsenic concentrations detected in CS soil samples were below this background concentration, with one exception (i.e., soil sample collected at SWMU 22). This one single arsenic concentration detected above the background criterion was delineated by surrounding soil samples, all of which showed arsenic concentrations below the facility-specific background arsenic level. In addition, soil throughout SWMU 22, including the location of the sample exceeding the background arsenic criterion, was excavated and removed as a result of physical alterations at this unit.

In an October 26, 2000 letter to ATOFINA Chemicals, ADEM approved the CS Report for the Mobile Plant (dated September 1999), and concurred with ATOFINA Chemicals conclusion that no further action is necessary for the CS SWMUs and AOCs. ATOFINA Chemicals recently conducted the soil sampling specified in the RFI Work Plan (addressing only SWMU 2), and the data collected show that constituent concentrations are also below the applicable residential and industrial risk-based criteria.

V. CONCLUSION FOR CA750

As indicated in Attachment 1 of the Environmental Indicator evaluation for the Mobile Plant (Documentation of Environmental Indicator Determination, CA 725 – Current Human Exposures Under Control), historical and recent sampling conducted at the Mobile Plant confirms that Appendix IX constituents are not present in groundwater at concentrations above risk-based criteria for protection of human health and the environment. Analytical results for groundwater samples collected at the Mobile Plant showed sporadic, low-level detection's of a limited number of Appendix IX constituents (mostly metals reported above laboratory detection limits), and the only organic constituent detected in the samples was chloroform, which was detected in only 21 samples. None of the constituents detected was reported at a concentration that exceeded either MCLs, or, in the case of constituents with no established MCL, other relevant risk-based screening criteria (EPA Region 3 Risk-Based Concentration Table tap water criteria). Additional sampling conducted as part of an alternate source demonstration for closure of the former equalization basin continued to show only sporadic, low-level detection's of chloroform which were continuously below the MCL of 100 µg/l (maximum reported concentration was 45µg/l).

In October 2000, ATOFINA Chemicals obtained additional groundwater samples in accordance with the RFI work plan. Analysis of samples collected from the location of a former lift station for an equalization basin (SWMU 2) showed that the only constituent detected was tin, and the concentration reported was significantly below the applicable risk-based screening criteria (by several orders of magnitude). Chloroform was not detected in the sample obtained from this location.

In addition to the groundwater analytical data collected to date, the results of soil sampling completed at the Mobile Plant under the RCRA Corrective Action Program do not indicate potential impacts to groundwater quality related to constituent concentrations present in soil.

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

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

Facility Name: ATOFINA Chemicals, Inc.
Facility Address: Highway 43, Axis, Mobile County, Alabama
Facility EPA ID #: ALD 000 827 154

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 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		X		
Air (indoors) ²		X		
Surface Soil (e.g., <2 ft)		X		
Surface Water		X		
Sediment		X		
Subsurface Soil (e.g., >2 ft)		X		
Air (outdoors)		X		

 X 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:

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) RCRAInfo Event Code (CA725)

Surface and Subsurface Soil:

Based on the results of soil sampling and analysis conducted to characterize potential releases from SWMUs and AOCs at the Mobile Plant under the Confirmatory Sampling (CS) and RCRA Facility Investigation (RFI) programs, constituents were not detected above appropriately protective risk-based criteria. The criteria used in evaluating the soil data were those specified in the SWMU Corrective Action Permit for the Mobile Plant and approved in the CS and RFI work plans, consisting of EPA Region 3 Risk-Based Concentrations (RBCs) and RCRA Health Based Criteria for constituents that do not have an RBC developed by EPA Region 3. Based on the analytical results for all the SWMUs and AOCs evaluated during these programs, no constituents were found at concentrations greater than either the residential or industrial risk-based criteria for surface and subsurface soils, except for arsenic.

Arsenic concentrations detected in soil samples collected at the SWMUs investigated during the CS program showed relatively uniform distribution and a limited range of concentrations reported. Based on the arsenic results, a site-specific background soil sampling investigation was conducted during the CS program to determine if the arsenic concentrations detected at certain SWMUs were due to releases from the SWMUs or were representative of ambient arsenic concentrations in soil at the Mobile Plant. Following guidance developed by EPA (Region 4), the background arsenic concentration in soil at the Mobile Plant was established, and all arsenic concentrations detected in CS soil samples were below this background concentration, with one exception (i.e., soil sample collected at SWMU 22). This one single arsenic concentration detected above the background criterion was delineated by surrounding soil samples, all of which showed arsenic concentrations below the facility-specific background arsenic level. In addition, soil throughout SWMU 22, including the location of the sample exceeding the background arsenic criterion, was excavated and removed as a result of physical alterations at this unit.

In an October 26, 2000 letter to ATOFINA Chemicals, ADEM approved the CS Report for the Mobile Plant (dated September 1999), and concurred with ATOFINA Chemicals conclusion that no further action is necessary for the CS SWMUs and AOCs. ATOFINA Chemical's recently conducted the soil sampling specified in the RFI Work Plan (addressing only SWMU 2), and the data collected show that constituent concentrations are also below the applicable residential and industrial criteria.

Groundwater:

Historical and recent sampling conducted at the Mobile Plant confirms that Appendix IX constituents are not present in groundwater at concentrations above risk-based criteria for protection of human health and the environment. The risk-based criteria used in evaluating groundwater quality data are the Federal Primary and Secondary Drinking Water Standard Maximum Contaminant Levels (MCLs) or, in cases where there is no MCL established for detected constituents, the tap water value taken from the EPA Region 3 RBCs. Use of these criteria is a conservative measure for groundwater quality data evaluation, as groundwater beneath the plant site is not used as a source for drinking water or sanitary purposes (i.e., showering, washing hands, etc.).

There are nine (9) wells previously used for groundwater monitoring and three (3) production wells (used for process and non-contact cooling water) at the Mobile Plant. The monitoring wells

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

were installed in 1981 (4 wells) and 1986 (5 additional wells) to meet the groundwater monitoring requirements under RCRA for a former wastewater equalization basin, which was closed in 1991. Two of the production wells (i.e., P-1 and P-2) were installed during the initial construction of the Mobile Plant in 1980, and P-3 was installed in 1989. An additional monitoring well is located in the southeast portion of the plant, remote from the other 9 wells, and was sampled on only one occasion.

Groundwater sampling of the monitoring wells and the production wells was conducted periodically between 1982 and 1991, with over 45 separate sampling events conducted. While these events have been varied with regard to frequency and constituents analyzed, a number of the sampling events included analysis for Appendix IX compounds. The results of sampling during these previous events showed only sporadic detections of constituents in a limited number of the monitoring wells. Only limited numbers of volatile organic compounds (VOCs) and metals were detected; semi-volatile organic compounds (SVOCs), pesticides/herbicides, and PCBs were not detected in any of the samples collected for analysis of these parameters. Sampling conducted in June 1987 included full VOCs analysis for the entire 9-well network and analysis for Appendix IX constituents in five of the wells (MW-5 through MW-9). Consistent with earlier sampling results, the data showed sporadic, low-level detections of a limited number of Appendix IX constituents (mostly metals reported above laboratory detection limits), and the only organic constituent detected in the samples was chloroform, which was detected in only 21 samples. None of the constituents detected was reported at a concentration that exceeded either MCLs, or, in the case of constituents with no established MCL, other relevant risk-based screening criteria (EPA Region 3 Risk-Based Concentration Table tap water criteria). Additional sampling conducted as part of an alternate source demonstration for closure of the former equalization basin continued to show only sporadic, low-level detections of chloroform which were always below the MCL of 100 µg/l (maximum reported concentration was 45µg/l).

In October 2000, ATOFINA Chemicals obtained additional groundwater samples in accordance with the RFI work plan. Analysis of samples collected from the location of a former lift station for the equalization basin (SWMU 2) showed that the only constituent detected was tin, and the concentration reported was significantly below the applicable risk-based screening criteria (by several orders of magnitude). Chloroform was not detected in the sample obtained from this location.

In addition to the groundwater analytical data collected to date, the results of soil sampling completed at the Mobile Plant under the RCRA Corrective Action Program do not indicate potential impacts to groundwater quality related to constituent concentrations present in soil.

Surface water/Sediment:

Sampling of soil in the stormwater drainage ditches at the Mobile Plant (collectively designated SWMU 40) during the CS investigation indicated that there are no constituents present in the ditches at concentrations above the applicable screening criteria. In addition, there are no known or suspected releases of constituents from SWMUs or AOCs to surface water.

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

Air:

Based on the limited occurrence and low-level concentrations of constituents in soil and groundwater at the Mobile Plant, releases to air are not currently or expected to be observed above appropriately protective risk-based criteria for either indoor (i.e., enclosed buildings/control rooms) or outdoor air. Since the only VOC detected in groundwater that is likely related to a release from a SWMU, chloroform, was present infrequently and at low-concentrations, there are no potential impacts to ambient air related to volatilization of VOCs from groundwater and migration of vapors through the vadose zone to the atmosphere. In addition, the limited number and low concentrations of constituents detected in soil samples obtained during the CS investigation preclude the resuspension (wind erosion) and transport of contaminated soil (i.e., particulate) in air. A comparison of CS and RFI soil sampling data to Region 9 PRGs for industrial soils (which factor potential exposure via inhalation (emissions) and ingestion (particulate) of constituents in soil) show no exceedances of these criteria.

References:

RCRA Facility Investigation Work Plan, November 1998 (Walk Haydel)
CS Report, September 1999
RFA January 1993
EPA Region 3 Risk-Based Concentration Tables
EPA Region 9 Preliminary Remediation Goals

Current Human Exposures Under Control Environmental Indicator (EI) RCRAInfo 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 Human Receptors (Under Current Conditions)							
<u>“Contami- nated” 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>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.

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

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

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

Rationale and

Reference(s): _____

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): _____

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) RCRAInfo Event Code
(CA725)**

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

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 ATOFINA Chemicals, Inc. facility, EPA ID #ALD 000 827 154, located at Highway 43 in Axis, Mobile County, 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: Keith West Date August 24, 2001
Keith West
Industrial Facilities Section
Hazardous Waste Branch
Land Division

Supervisor: Vernon H. Crockett Date August 24, 2001
Vernon H. Crockett, Chief
Industrial Facilities Section
Hazardous Waste Branch
Land Division

Supervisor: Stephen A. Cobb Date August 24, 2001⁵
Stephen A. Cobb, Chief
Hazardous Waste Branch
Land Division

Locations where References may be found:

Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

⁵ 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.

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

U.S. EPA Region 4
61 Forsythe Street
Atlanta Federal Center
Atlanta, Georgia 30303

ATOFINA Chemicals, Inc.
Highway 43
Axis, Alabama 36505

ATOFINA Chemicals, Inc.
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ATTACHMENT 2
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: ATOFINA Chemicals, Inc.
Facility Address: Highway 43, Axis, Mobile County, Alabama
Facility EPA ID #: ALD 000 827 154

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 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.

X 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:

As indicated in Attachment 1 of the Environmental Indicator evaluation for the Mobile Plant (Documentation of Environmental Indicator Determination, CA 725 – Current Human Exposures Under Control), historical and recent sampling conducted at the Mobile Plant confirms that Appendix IX constituents are not present in groundwater at concentrations above risk-based criteria for protection of human health and the environment. Analytical results for groundwater samples collected at the Mobile Plant showed sporadic, low-level detections of a limited number of Appendix IX constituents (mostly metals reported above laboratory detection limits), and the only organic constituent detected in the samples was chloroform, which was detected in only 21 samples. None of the constituents detected was reported at a concentration that exceeded either MCLs, or, in the case of constituents with no established MCL, other relevant risk-based screening criteria (EPA Region 3 Risk-Based Concentration Table tap water criteria). Additional sampling conducted as part of an alternate source demonstration for closure of the former equalization basin continued to show only sporadic, low-level detections of chloroform which were always below the MCL of 100 µg/l (maximum reported concentration was 45µg/l).

In October 2000, ATOFINA Chemicals obtained additional groundwater samples in accordance with the RFI work plan. Analysis of samples collected from the location of a former lift station for an equalization basin (SWMU 2) showed that the only constituent detected was tin, and the

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).

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750) concentration reported was significantly below the applicable risk-based screening criteria (by several orders of magnitude). Chloroform was not detected in the sample obtained from this location.

In addition to the groundwater analytical data collected to date, the results of soil sampling completed at the Mobile Plant under the RCRA Corrective Action Program do not indicate potential impacts to groundwater quality related to constituent concentrations present in soil.

References:

- RCRA Facility Investigation Work Plan, November 1998 (Walk Haydel)
 - CS Report, September 1999
 - RFA January 1993
 - EPA Region 3 Risk-Based Concentration Tables
 - EPA Region 9 Preliminary Remediation Goals
-
-
-
-

3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"⁶ 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): _____

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) RCRAInfo Event Code (CA750)

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration⁸ 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 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):

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

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750)

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.

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.


RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750)

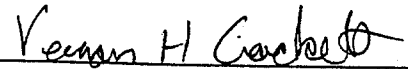
8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

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 ATOFINA Chemicals, Inc. facility, EPA ID # 000 827 154, located at Highway 43, in Axis, Mobile 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.

Completed by:  Date August 24, 2001
Keith West
Industrial Facilities Section
Hazardous Waste Branch
Land Division

Supervisor:  Date August 24, 2001
Vernon H. Crockett, Chief
Industrial Facilities Section
Hazardous Waste Branch
Land Division

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo Event Code (CA750)

Supervisor:



Stephen A. Cobb, Chief
Hazardous Waste Branch
Land Division

Date August 24, 2001

Locations where References may be found:

Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

U.S. EPA Region 4
61 Forsythe Street
Atlanta Federal Center
Atlanta, Georgia 30303

ATOFINA Chemicals, Inc.
Highway 43
Axis, Alabama 36505

ATOFINA Chemicals, Inc.
2000 Market Street, 19th Floor
Philadelphia, Pennsylvania 19103

Contact telephone and e-mail numbers

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mark.piazza@atofina.com

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ADEM



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JAMES W. WARR
DIRECTOR

FOB JAMES, JR.
GOVERNOR

September 30, 1997

MEMORANDUM

TO: Wm. Gerald Hardy, Chief *WGH 10/1/97*
Hazardous Waste Branch
Land Division

THROUGH: Stephen A. Cobb, Chief *SAC 9/30/97*
Industrial Facilities Section
Hazardous Waste Branch
Land Division

FROM: Keith West *KNW 9/30/97*
Industrial Facilities Section
Hazardous Waste Branch
Land Division

RE: Evaluation of Elf Atochem North America, Inc.'s Axis, Alabama facility status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA 725 and CA 750).
USEPA Identification Number: ALD 000 827 154

Facsimiles: (334)
Administration: 271-7950
Air: 279-3044
Land: 279-3050
Water: 279-3051
Groundwater: 270-5631
Field Operations: 272-8131
Laboratory: 277-6718
Education/Outreach: 213-4399

I. PURPOSE OF MEMORANDUM

This memo is written to formalize an evaluation of Elf Atochem's Axis, Alabama, facility status in relation to the following RCRIS corrective action codes:

1. Human Exposures Controlled Determination (CA725),
2. Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the EPA Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

Concurrence by the Hazardous Waste Branch Chief is required prior to entering these codes into RCRIS. Dating and signing above satisfies your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations.



II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are five (5) status codes listed under CA750. These status codes are:

1. YE Yes, applicable as of this date.
2. NA Previous determination no longer applicable as of this date.
3. NC No control measures necessary.
4. NO Facility does not meet definition.
5. IN More information needed.

Note that the status codes for CA750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured in terms of a designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every area of contamination at the facility must meet the definition before these event/status codes can be entered.

This particular CA725 evaluation is the first evaluation performed by the Alabama Department of Environmental Management for Elf Atochem North America, Incorporated facility. Because assumptions have to be made as to whether or not human exposures to current media contamination are plausible and, if plausible, whether or not controls are in place to address these plausible exposures. This memo first examines each environmental media (i.e., soil, groundwater, surface water, and air) at the entire facility including any offsite contamination emanating from the facility rather than from individual areas or releases. After this independent media examination is presented, a final recommendation is offered as to the proper CA725 status code for Elf Atochem North America, Inc.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents:

- SWMU Corrective Action Permit, September 1997
- RCRA Facility Investigation Work Plan, July 1995
- RCRA Confirmatory Sampling Work Plan, July 1995
- RCRA Facility Assessment Report, January 1993
- RCRA Operating Permit, September, 1985

III. MEDIA-BY-MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE EXPOSURES

Background

The Elf Atochem North America facility is located in Mobile County in southern Alabama, near Mobile Bay and the Gulf of Mexico. It lies six miles north of Creola, Alabama on U. S. Highway 43. The facility began its production of organotin products in September 1981; additional facilities to produce impact modifiers (IM), octyl mercapto acetate (OMA), and thioglycolic acid (TGA) began operating in the summer of 1985. Products manufacturing at this location include:

1. Tin Tetrachloride, from tin ingots and chlorine gas.
2. Butyl Crudes (a mixture of tetrabutyltin and tributyltin chloride) from tin tetrachloride and tributyl aluminum.
3. Tributyltin chloride, dibutyltin dichloride and monobutyltin trichloride, from the redistribution of butyl crudes with tin tetrachloride.
4. Thioglycolic acid (TGA) from aqueous ammonia, hydrogen sulfide, monochloroacetic acid, and hydrochloric acid.
5. Octyl mercapto acetate (OMA) from octyl alcohol and TGA.
6. Emulsion polymers (impact modifiers, or IM) under the trade names Metablen "C"TM Metablen "P"TM and Durastrength/200 (D-200) Resins.

Elf Atochem North America, Inc. is presently owned by the Elf Aquitaine Group and was formed by the mergers of M&T Chemicals with Pennwalt Corporation and Atochem, Inc. in 1989. This reorganization did not result in changes of ownership or manufacturing operations at the Axis facility.

The facility submitted its Part B Permit Application in June 1984. After several revisions, Federal RCRA/HSWA and State AHWMMMA Permits were issued for Storage Areas 300 and 800 (SWMUs 18 and 19) on September 30, 1985. These permits were modified on September 29, 1986, to include the Former Equalization Basin (SWMU 1) as a RCRA/AHWMMMA regulated surface impoundment.

In August 1986, the U. S. EPA issued a Complaint and Compliance Order against the facility alleging that the monitoring well system at Atochem was not sufficient to detect significant amounts of hazardous waste immediately upon release from the Equalization Basin (SWMU 1). The problem arose because of fluctuating groundwater flow directions, which caused the "upgradient" monitoring well to be hydraulically downgradient on occasion.

Following the installation of four monitoring wells in June 1986, a Consent Agreement was finalized and an accelerated groundwater-sampling program was implemented. Groundwater monitoring conditions and the installation of an additional monitoring well in the vicinity of Production Well P-1 were also written into the facility's Part B Permit.

The accelerated monitoring program involved five biweekly sampling events and established background data for the background well (MW-5). This work was completed by December 31, 1986. Other groundwater monitoring requirements outlined in the facility's Groundwater Monitoring Plan included 1) semiannual groundwater analysis for pH, total tin, chlorides, phenols, and total dissolved solids (TDS); 2) analysis of samples from the Former Equalization Basin (SWMU 1); 3) annual sampling of Production Well P-1; 4) determining depth to water during every sampling event; and 5) determining groundwater flow rate and direction annually. The Consent Agreement was concluded in February 1987 when the Final Work Production was submitted.

Except for determining depth to water, the facility was in compliance with groundwater monitoring requirements until closure of the Equalization Basin (SWMU 1) began. At that time, Atochem suspended groundwater monitoring and temporarily closed monitoring well MW-6.

To comply with the deadline for closure of hazardous waste impoundments specified in the provisions of their Part B Permit, Atochem ceased to use the RCRA regulated Former Equalization Basin (SWMU 1) and the Former Stormwater Basin (SWMU 3) in November 1988. Closure activities for these units are as follows:

- Decanted and treated the wastes remaining in the basin through the 800 WWTP;
- Dewatered and excavated the remaining sludge for off-site disposal;
- Excavated and washed gravel and rip-rap for future on-site use;
- Excavated and disposed of concrete, fill dirt, polymeric liner, and sand layer at the nonhazardous Pine Ridge Landfill in Meridian, Mississippi;
- Sampled and analyzed remaining clay liner to determine if clean closure requirements had been met;
- Collapsed dikes to bring basin up to grade.

These activities were completed on July 21, 1989. However, clean closure of the basin could not be certified if releases from the regulated unit were the source of documented groundwater contamination. In order to certify clean closure, the facility submitted an alternate source demonstration in September 1988 to convince ADEM that units other than the closed equalization basin (SWMU 1) contaminated the groundwater. In these documents Atochem stated that the chloroform (up to 45 ppb) and isopropyl ether (up to 315 ppm) contamination originated from the Equalization Basin Lift Station (SWMU 2) and a manhole associated with the 801 Wastewater Pipes (SWMU 29), respectively. ADEM initially accepted the alternate source demonstration for the IPE but not for the chloroform. The alternate source demonstration for chloroform was accepted as part of the closure certification at the time of report preparation.

Atochem began voluntary corrective action of the chloroform and IPE plumes in April 1987. Use of the Equalization Basin Lift Station (SWMU 2) was discontinued in November 1988; the unit was removed in March 1989. A new production Well P-3 was installed as part of the IPE recovery phase of the corrective action plan. Water from the production well is utilized in the facility's processes. In April 1995 the facility submitted a SWMU Corrective Action Permit Application to ADEM. After two revisions, ADEM issued a SWMU Corrective Action Permit to Elf Atochem North America, Inc. on September 26, 1997.

Groundwater

The water table at Atochem lies 25 to 36 feet beneath the site. Both the Miocene-Pliocene Aquifer and the Alluvial-Coastal Aquifer (along the Mobile River) which underlie the site are capable of yielding a million gallons of water per day to individual wells in the area. The two aquifers act as a single hydrologic unit and are heavily used by local industry. Groundwater monitoring wells are screened at depths of 40 to 50 feet below the surface and production wells are screened 80 to 90 feet below the surface.

The Alluvial-Coastal Aquifer is the source of the facility's drinking and production water. Data obtained from onsite monitoring wells indicates that the aquifer is unconfined in the vicinity of the closed Equalization Basin. The thickness of the saturated zone ranges from 65 to 75 feet.

Rainfall is the major source of aquifer recharge, but only a small percentage infiltrates the subsurface to reach the aquifers. Infiltration is dependent on the permeability and saturated hydraulic conductivity of the soil, as well as the slope of the land and the amount of water already present in the soil. Flat areas underlain by gravel and coarse sand allow more infiltration than steeper slopes underlain by clay. In the vicinity of the facility, recharge is probably restricted to areas where the upper alluvium is thin or absent. Aquifer recharge may also occur at Cold Creek and the reservoir west of the site. Discharge occurs to production wells and the Mobile River, which is thought to be hydraulically connected to the aquifers. Previous groundwater investigations have detected low levels of chloroform in historical groundwater analysis. In October 1986 and January 1987 sampling events, some chloroform was detected in groundwater analyses. On the basis of these results, ADEM requested development and implementation of a compliance-monitoring program for the former Equalization Basin. Atochem began voluntary corrective action of the chloroform and IPE plumes in April 1987. Use of the Equalization Basin Lift Station (SWMU 2) was discontinued in November 1988; the unit was removed in March 1989. A new production Well P-3 was installed as part of the IPE recovery phase of the corrective action plan. Water from the production well is utilized in the facility's processes. In April 1995 the facility submitted a SWMU Corrective Action Permit Application to ADEM. After two revisions, ADEM issued a SWMU Corrective Action Permit to Elf Atochem North America, Inc. on September 26, 1997.

Surface Water/Sediment

The facility is situated approximately two miles west of the Mobile River and 16 miles northwest of Mobile Bay. The topography is generally rolling to flat with elevations ranging from 10 to 50 feet above sea level in the immediate vicinity of the facility and 200 to 300 feet above sea level approximately two to three miles west of the facility. Surface drainage from the facility generally flows east to the Mobile River via Cold Creek, which is situated approximately 1000 feet south of the facility process areas. Cold Creek flows northwest towards the Mobile River. Sisters Creek and an unnamed tributary of Sisters Creek are situated approximately one-half mile north of the facility. The Mobile public water supply canal is situated approximately one mile west of the facility's process areas at elevations greater than 50 feet above sea level. At this time there are no known releases to surface water and/or sediments.

Soil

Geraghty & Miller's 1990 report demonstrated that low levels of chloroform had been detected in some of the subsurface soils in the area immediately adjacent to the former lift station.

No subsurface soil samples have been analyzed to assess the absence or presence of tin in the soils around the lift station. Further investigations of tin in surface and subsurface soils will be undertaken upon the approval of the RFI and CS Work Plans.

Air

Releases to the air from soil, groundwater and/or surface water at this facility is not known or expected to be occurring above relevant action levels.

IV. STATUS CODE RECOMMENDATION FOR CA725:

The routes of human exposure at Elf Atochem's facility include groundwater and soil. At this time there are no known releases that have traveled offsite. However, as explained in the previous sections, human exposures to soil and groundwater are not fully controlled at this facility. Therefore, it is recommended that **CA725 NO** be entered into RCRIS for this facility.

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

This evaluation for CA750 is the first formal evaluation performed for Elf Atochem North America, Inc. Please note that CA750 is based on the adequate control of all contaminated groundwater at the facility. The discussions in Section III are used as the basis for the following recommendation.

VI. STATUS CODE RECOMMENDATION FOR CA750:

Based on data contained in the documents referenced in Section II and summarized in Section III, releases from solid waste management units and/or areas of concern have contaminated groundwater at concentrations above relevant action levels. Because all groundwater contamination at or emanating from the facility is not controlled and this is the first evaluation of Elf Atochem's facility, it is recommended that **CA750 NO** be entered into RCRIS.

File: Elf Atochem/Mobile County/TSD