ADEM

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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December 11, 2003

CERTIFIED MAIL # 7003 0500 0001 2708 7329
RETURN RECEIPT REQUESTED

William Hasley
Plant Manager
Koppers Industries, Inc.
1415 Louisville Street
Montgomery, Alabama 36104-1609

Re: Environmental Indicator Evaluations
Koppers Industries, Inc., Montgomery, Alabama
1415 Louisville Street
Montgomery, Alabama 36104-1609
USEPA I.D. No. ALD 004 009 403

Dear Mr. Hasley:

The Alabama Department of Environmental Management (ADEM) has recently completed a qualitative evaluation of the environmental conditions at Koppers Industries, Incorporated (Koppers), in Montgomery, Alabama. ADEM is pleased to provide you with a copy of the evaluation for your information.

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

2) Plausible human exposure to soil, groundwater, air and surface water contamination at or from the facility, and;

2) The continuing migration of contaminated groundwater, both on-site and off-site.

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

The enclosed environmental indicator evaluation should not be viewed as somehow separate and distinct from the corrective action activities taken at Koppers. Rather, it is an evaluation of current environmental conditions and a focusing of efforts on potential concerns that ADEM, the facility and interested members of the public must work toward satisfying through implementation of the corrective action process at Koppers. Therefore, every evaluation should conclude with a projection or outline of future actions to move the facility toward the point where human exposures and/or groundwater releases are controlled. It should be understood that the evaluations operate at the "facility level." In other words, *every area* at the facility must meet the control definition before human exposures or groundwater releases can be considered controlled.

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

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

If questions or comments arise regarding this evaluation, please contact Michael Malires of my staff at (334) 270-5628.

Sincerely,

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

PDD / MJM / sep:L: Koppers_Montgomery / EI_Memo_Koppers_Aug_2003.doc

Encl.: Environmental Indicator Memo

File: Koppers Industries Incorporated / Montgomery County / ALD 004 009 403 / H / Correspondence

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December 11, 2003

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

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

FROM: Michael J. Malires MJM
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division

RE: **Evaluation of status under the RCRAInfo Corrective Action Environmental Indicator Event Codes (CA725 and CA750)**
Koppers Industries, Incorporated
Montgomery, Montgomery County, Alabama
USEPA Identification Number ALD 004 009 403

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the status of Koppers in relation to the following corrective action event codes defined in the RCRAInfo database:

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

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

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

This particular evaluation is the second evaluation performed by the Alabama Department of Environmental Management (ADEM) for the Koppers Montgomery facility (a previous evaluation was completed by ADEM, dated September 15, 1997). The evaluation, and associated interpretations and conclusions on contamination, exposures and contaminant migration at the facility are based on information obtained from the following documents:

- *2002 Second Semi-Annual Corrective Action Monitoring Report (RETEC May 2003)*
- *Revised Phase II RCRA Facility Investigation (RFI) Report (Dames and Moore, February 1999)*
- *Interim Measures Fish Tissue Study Report (Beazer, March 24, 1998)*
- *Phase I RCRA Facility Investigation (RFI) Report (Dames and Moore, December 1997)*
- *Alabama River Sediment Assessment (Dames and Moore, July 1991)*

III. FACILITY SUMMARY

Koppers Industries, located in Montgomery, Alabama, is an active wood treating facility located near the downtown area of the city of Montgomery, Alabama. It comprises approximately 105 acres adjoining the Alabama River near Interstate 65. The facility treats primarily railroad ties. Initial construction of the site began in 1925 under a joint venture of Ayer and Lord Tie Company and Bond Brothers Creosote Company. Wood treating operations began at the facility, known as Producers Wood Preserving, in 1926. At that time, only creosote treatment was implemented. Koppers Industries, Inc. purchased the facility in 1941. Throughout this period, it is reported that only creosote wood treating was conducted. Creosote wood treating has continued through the present time.

In 1941, Koppers installed a new pressure cylinder to begin wood treating with chromated zinc chloride (CZC) and CZC(FR), a flame retardant. CZC treatment is thought to have continued until approximately 1957 when the cylinder was converted to a chromated copper arsenate (CCA) process. Copper naphthalene reportedly also may have been used, but was apparently discontinued after a short time.

Pentachlorophenol (penta) treatment also began about 1957 and has continued through the present. Penta treatment was initially performed using a mixture of creosote and penta known as creo-penta treatment. Creo-penta was used until about 1962 when it was replaced by an alternative process (known as oil-penta) where penta is dissolved in diesel fuel. The oil-penta mixture has been used for wood treatment at the facility from 1962 until the present. From 1964 to 1984 another penta process was used, known as the Cellon process. An ether based process, Cellon was discontinued and converted to CCA treatment. The manufacturing facility continues to use creosote and pentachlorophenol in the pressure treatment of wood products for railroad, utilities, and other users.

Process waters and wastewaters were handled in a surface impoundment. Designed to be a settling pond, it was constructed in approximately 1964. Sediment sludges that accumulated in the impoundment were designated as listed hazardous waste (K001 - bottom sediment sludge from process wastewater derived from wood treating/preserving processes that use creosote and/or pentachlorophenol). In 1978, an above ground surge tank and oil-water separators were installed and the impoundment was no longer used for treatment; however, it remained in use as a holding basin prior to discharge of wastewater to the POTW.

The impoundment was closed in 1982/83 according to an approved closure plan. Closure was certified on December 21, 1983. Closure entailed removing supernatant and routing it through the on-site pretreatment system prior to discharge to the POTW. Recoverable oils were removed from the bottom of the pond and returned to the process. Approximately the bottom six inches of sludge were deemed non-reclaimable and burned in an on-site boiler. The pond was then filled with earth and capped with topsoil and vegetation. A cooling pond was constructed between 1947 and 1950, which was located adjacent to the regulated surface impoundment. It is unknown if this pond held contact cooling water. Apparently, the pond was "graded over" sometime between 1989 and 1992. Although this unit may not have been directly assessed, its proximity to the regulated surface impoundment ensures that much of its impacts have likely been delineated.

In September 1985, EPA Region IV issued a Complaint and Compliance Order to Koppers as a result of certain RCRA violations. Among other things, this Order required Koppers to implement groundwater monitoring and develop a Groundwater Quality Assessment Program. Numerous hydrogeologic investigations were conducted between 1985 and 1991. In all, a network of 64 wells were installed (56 on-site, 12 off-site) in the unconfined aquifer and another 4 wells were installed in the deeper confined aquifer. A Groundwater Quality Assessment determined that significant groundwater contamination existed. Thus, the facility became subject to post-closure care and compliance monitoring. A Post-Closure Permit for the former surface impoundment was issued on September 29, 1995.

IV. CONCLUSION FOR CA725

The appropriate status code to be entered for RCRAInfo event code CA725 (Current Human Exposures Under Control) is "YES." This status code has been concluded based on the current environmental setting at the Koppers site. Some media has been documented to be contaminated above appropriate action levels, but each media has an "insignificant" exposure pathway based on the contaminated media's location and natural barriers to exposure.

V. CONCLUSION FOR CA750

The appropriate status code to be entered for RCRAInfo event code CA750 (Migration of Groundwater Under Control) is "YES." This status code has been concluded based on the current environmental setting at the Koppers site. Groundwater is contaminated; however, the "existing area of contaminated groundwater" has stabilized and continued migration is not expected. Additionally, there is no evidence of contaminated groundwater discharge to surface water.

VI. SUMMARY OF FOLLOW-UP ACTIONS

Koppers is nearing the conclusion of the RCRA Facility Investigation stage of the corrective action process, and is developing a Corrective Measures Study (CMS) for potential final remedies at the site. Future monitoring will be required as part of a selected final remedy to verify that all media contamination has stabilized and is not posing an "unacceptable" threat to human health and the environment.

Attachments:

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

MJM / Koppers Industries, Incorporated / Montgomery, Alabama / ALD 004 009 403 / EI Memo

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

Facility Name: Koppers Industries, Incorporated
Facility Address: Montgomery, Montgomery County, Alabama
Facility EPA ID #: ALD 004 009 403

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?

__x__ 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			NAPL detected
Air (indoors)[2]		x		No structures present
Surface Soil (e.g., <2 ft)	x			Pentachlorophenol detected
Surface Water		x		No evidence of "unacceptable" surface water quality
Sediment	x			Pentachlorophenol detected
Subsurface Soil (e.g., >2 ft)	x			NAPL in vadose soil zone; pentachlorophenol detected
Air (outdoors)		x		No evidence of outdoor air contamination

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

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

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

Rationale and Reference(s):

Groundwater

The *Phase II RFI Report (Dames & Moore 1999)* documented evidence of free-phase non-aqueous phase liquid (NAPL) beneath the facility as well as beneath the Alabama River at depths of 30-50 feet below the riverbed. Residual product was also detected at 10 feet below the riverbed and as deep as 50 feet below the riverbed. According to the *2002 Semi-Annual Corrective Action Monitoring Reports (RETEC, May 2003)*, 4 monitoring wells on-site reported evidence of "free product" on the well gauging survey (M-14, M-21A, M-09B and M-24B). It also states that the product is in the form of globules or as an emulsion rather than a phase-separated layer.

Dissolved-phase contamination has also been observed. Constituents of concern include pentachlorophenol, naphthalene, arsenic, and dioxin and furan congeners. Pentachlorophenol was detected at a maximum concentration of 3,700 ug/L, naphthalene was detected at a maximum concentration of 9,700 ug/L and arsenic was detected at a maximum concentration of 12.1 ug/L. Dioxin and furan congeners ranged from 0.001 ug/L to 1.0 ug/L.

Air (indoors)

There are no structures on-site that pose an exposure route for indoor air contamination.

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

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

Surface Soil

Evidence of contamination exists in surface soils for many SVOC's, VOC's, dioxin and furan congeners, and arsenic. According to the *Phase II RFI Report (D & M 1999)*, pentachlorophenol was detected at levels as high as 570,000 ug/kg at a depth of 1 ft, benzo(a)pyrene at 45,000 ug/kg as well as many other parameters including benzo(a)anthracene, indeno(1,2,3-c,d)pyrene, benzo(b)fluoranthene and benzo(k)fluoranthene. The VOC 2-Butanone (MEK) was detected at 14 ug/kg. Dioxin and furan TEQ values exceeded screening criteria as well. TEQ for dioxin and furan congeners were as high as 53 ug/kg.

Surface Water

According to the *Alabama River Sediment Assessment (Dames and Moore, July 1991)*, dioxin and furans were not detected in any surface water sample. The *Phase II RFI Report (Dames and Moore, February 1999)* found that sediment was not contaminated above relevant action levels for any constituent except the TEQ for dioxin and furan congeners, and that free product and residual product were only detected at depths beginning at 30 ft beneath the riverbed. Analytical results from these samples indicate that dissolved VOC's and SVOC's from the NAPL observed in relatively narrow horizons in sediment does not migrate to any significant degree upward towards the riverbed. The data indicates that contamination detected near the Alabama River exists 30 ft beneath the riverbed and no evidence of contamination exists at more shallow depths that could potentially affect the water quality of the Alabama River.

Sediment

According to the *Alabama River Sediment Assessment (Dames and Moore, July 1991)*, dioxins and furans were detected in sediments in concentrations ranging from 0.002 to 2.69 ng/l, which is above the TEQ factor. The *Phase II RFI Report (Dames and Moore, February 1999)* did not detect any SVOC's or VOC's above relevant action levels in the Alabama River sediments. Analytical results from these samples indicate that dissolved SVOC's from the NAPL observed in relatively narrow horizons below the riverbed does not migrate to any significant degree either upward or downward. However, dioxin and furan TEQ values reached as high as 0.089 ug/kg, which exceeds relevant screening criteria, as reported in the *Alabama River Sediment Assessment (Dames and Moore, July 1991)*.

Subsurface Soil

Evidence of contamination exists for subsurface soils from many SVOC's, VOC's, dioxin and furan congeners and arsenic. The *Phase II RFI Report (Dames and Moore, February 1999)* reported pentachlorophenol at a maximum concentration of 370,000 ug/kg, naphthalene at a maximum concentration of 30,000 ug/kg, benzo(a)pyrene at a maximum concentration of 17,000 ug/kg and benzo(b)fluoranthene at a maximum concentration of 25,000 ug/kg. Additionally, free-phase non-aqueous phase liquid (NAPL) has been found in the vadose zone. The *Phase II RFI Report (Dames and Moore, February 1999)* delineated the extent of NAPL in soils, and found that NAPL is present in the vadose zone.

Air (outdoors)

Releases to air from soil, groundwater, and/or surface water at Koppers are not known nor expected to be occurring above relevant action levels.

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	no	no	no	no	no	no	no
Soil (surface, e.g., <2 ft)	no	yes	no	yes	yes	no	no
Sediment	no	no	no	no	no	no	yes
Soil (subsurface, e.g., >2 ft)	no	no	no	yes	no	no	no

Instructions for Summary Exposure Pathway Evaluation Table:

1. For Media which are not "contaminated" as identified in #2, please strike-out specific Media, including Human Receptors' spaces, or enter "N/C" for not contaminated.

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

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

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

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

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

Rationale and Reference(s):

Groundwater

Based on the data provided in the *Phase II RFI Report (Dames and Moore, February 1999)* and based on the most recent *Semi-Annual Corrective Action Effectiveness Reports (RETEC, December 2002)*, contamination in the groundwater plume currently exists. However, the Phase II RFI Report and the Semi-Annual Corrective Action Effectiveness Reports show that groundwater flow is towards the Alabama River and that municipal well fields located southeast of the facility are not downgradient of the contaminated plume. Workers at Koppers are not exposed to groundwater; there are no day-cares on or off-site in the vicinity of the facility; there is no undergoing construction at the site that would be deep enough to encounter groundwater; a trespasser could not be exposed to groundwater due to the depth beneath the surface; groundwater is not a plausible exposure route for recreation due to the fact that groundwater

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

cannot be encountered for recreation; and, food cannot be affected by the contaminated groundwater because it is not in any direct contact with any vegetation that humans could consume.

Surface Soil

Surface soils are contaminated above relevant action levels on-site. Residential and recreational exposure scenarios are not applicable given the industrial nature of the site. Workers and trespassers could be exposed to surficial soils under current conditions, as well as construction workers conducting activities could disturb contaminated surficial soils

Sediment

Sediment contamination has been documented above relevant action levels in the riverbed of the Alabama River. Direct exposure to contaminated sediments is implausible due to the depth of the river. However, exposure to dioxins and furans through the consumption of bottom-feeding and predatory fish species is plausible given the concentration of these contaminants observed in shallow sediment samples.

Subsurface Soil

Subsurface soils have been reported to be contaminated with many parameters above relevant action levels. Residential exposure is implausible given the industrial nature of the site and surrounding property. Trespasser exposure to subsurface is also unexpected. Exposure to subsurface soils could result from construction activities involving excavation.

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

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

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

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

Rationale and Reference(s):

Surface Soils

Contaminants in surface soils have been detected above relevant industrial scenario action levels on-site. However, the locations of the most severely contaminated soils are in the vicinity of the former surface impoundment and downgradient of the former CCA treatment area (SWMU 12). This is not in close proximity to the current Production Area of the Koppers facility. Therefore, workers at Koppers would not be exposed to these constituents of concern on a daily basis and their actual exposure frequencies would not equal that assumed in the action level screening criteria. Similarly, construction scenarios and trespassing scenarios do not constitute an exposure frequency equal to that assumed in the action level screening criteria.

Sediment

Exposure to contaminated sediments through the consumption of fish is not considered significant because the *Interim Measures Fish Tissue Study (Beazer March 1998)* concluded that fish tissue was not contaminated above acceptable regulatory limits.

Subsurface Soils

This exposure pathway does not appear significant because subsurface soil exposure during a typical construction project would not meet the default exposure frequency and duration assumed in the development of relevant action levels.

---

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

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

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

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

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

Rationale and Reference(s):

6. Check the appropriate 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 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 Koppers Industries, Inc., facility, EPA ID # ALD 004 009 403, located in Montgomery, 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: (signature) Michael J. Malires (date) 12/11/03
Michael J. Malires
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division

Supervisor: (signature) Vernon H. Crockett (date) 12/11/03
Vernon H. Crockett, Chief
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division

Hazardous Waste: Branch Chief (signature) Phillip D. Davis (date) 12/11/03
Phillip D. Davis, Chief
Industrial Hazardous Waste Branch
Land Division

Location where References may be found:

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

Contact telephone number and e-mail address:

Michael J. Malires
(334) 270-5628
mmalires@adem.state.al.us

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

Facility Name: Koppers Industries, Incorporated
Facility Address: Montgomery, Montgomery, Alabama
Facility EPA ID #: ALD 004 009 403

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?

__x__ 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?

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

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

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

Rationale and Reference(s):

Groundwater

The *Phase II RFI Report (Dames & Moore 1999)* documented evidence of free-phase non-aqueous phase liquid (NAPL) beneath the facility as well as beneath the Alabama River at depths beginning at 30 feet below the riverbed and as deep as 50 feet below the riverbed. Residual product was also detected at 10 feet below the riverbed and as deep as 50 feet below the riverbed. According to the most recent *Semi-Annual Corrective Action Monitoring Reports (RETEC, December 2002)*, 4 monitoring wells on-site reported evidence of "free product" on the well gauging survey (M-14, M-21A, M-09B and M-24B). It also states that the product is in the form of globules or as an emulsion rather than a phase-separated layer.

In addition to evidence of NAPL, residual product and dissolved contamination have been detected as well. Constituents of concern include pentachlorophenol, naphthalene, arsenic, and dioxin and furan congeners. Pentachlorophenol was detected at a maximum concentration of 3,700 ug/L, naphthalene was detected at a maximum concentration of 9,700 ug/L and arsenic was detected at a maximum concentration of 12.1 ug/L. Dioxin and furan congeners TEQ ranged from 0.001 ug/L to 1.0 ug/L.

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

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

__x__ 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"[1]) - 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):

The *Phase II RFI Report (Dames & Moore 1999)* investigated the presence of NAPL and dissolved phase contamination beneath the facility and beneath the Alabama River. Borings B-15, B-16, B-17, B-27, and B-31 did not detect any SVOC's or evidence of free phase NAPL. These borings were taken at the furthest point downgradient from the facility and beneath the Alabama River. These borings indicate that the horizontal delineation the area of contamination is further inward towards the riverbank. Free product was detected in borings B-19, B-22, B-23, and B-29, which are located further up-gradient towards the Koppers facility and beneath the riverbed. The furthest downgradient sampling points indicate that horizontal migration has stabilized. Plans of future monitoring activities will be discussed in section 7.

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

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

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

__x__ 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):

There are two groundwater aquifers present on-site. One confined aquifer, which exists beneath the Eutaw Formation confined by a clay layer between 1 ft and 6 ft in thickness, and an unconfined aquifer in the Eutaw Formation and Alluvial Terrace Deposits consisting of silty sand and silty clay above the confining clay layer. The unconfined aquifer migrates towards the Alabama River and discharges into the river. Based on the *Interim Measures Fish Tissue Report (Beazer March 23, 1998)* and the data in the *Alabama River Sediment Assessment (Dames and Moore, July 1991)*, no adverse impacts to surface water or the ecosystem has been found resulting from the Koppers facility. No evidence exists to support that "unacceptable" surface water contaminants exist in the Alabama River.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[1] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature and number of discharging contaminants, or environmental setting) which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[1] 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 concentration[1] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[1] 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):

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

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[2])?

____ 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,[3] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of trained specialists, including ecologists) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

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

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

Rationale and Reference(s):

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

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

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

__x__ 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):

Koppers is nearing the conclusion of the RCRA Facility Investigation stage of the corrective action process, and they are using the information from the RFI to develop a Corrective Measures Study (CMS) for potential Final Remedies at the site. Upon implementing a Final Remedy at this site, monitoring requirements and confirmatory sampling efforts will be imposed to evaluate that the "existing area of groundwater contamination" is not migrating horizontally. The locations of this monitoring event(s) will be in the vicinity of borings B-15, B-16, B-17, B-27, and B-31. These locations did not detect any free phase NAPL nor any dissolved phase constituents above relevant action levels as described in the *Phase II RFI Report (Dames and Moore, 1999)*. Future monitoring will verify that groundwater contamination will not be migrating horizontally beyond the "existing area of groundwater contamination."

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 Koppers Industries, Incorporated facility, EPA ID # ALD 004 009 403, located at Montgomery, 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/State becomes aware of significant changes at the facility.

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

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

Completed by: (signature) Michael J. Malires (date) 12/11/03

Michael J. Malires
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division

Supervisor: (signature) Vernon H. Crockett (date) 12/11/03

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

Hazardous Waste: Branch Chief (signature) Phillip D. Davis (date) 12/11/03

Phillip D. Davis, Chief
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Location where References may be found:

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