DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: **KOPPERS CO.-HODGE FOUNDRY**
Facility Address: **42 LEACH ROAD, GREENVILLE, PA 16125**
Facility EPA ID #: **EPA ID # PAD 00 432 3796**

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

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

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): Three of four downgradient monitoring wells installed in the landfill area adjacent to the Little Shenango River as part of the 1983 Groundwater Monitoring Plan for the Koppers facility (MW-2A, -2B, and -3B) consistently exceeded the EPA Region III Tap Water RBC for arsenic (0.045 ug/l) during 3 consecutive quarters of sampling (3rd, 4th Quarter 1987 and 1st Quarter 1988).

Inorganics

Groundwater						
				Keystone Environmental Resources (May 27, 1988)		
Contaminant	MCL (ug/L)	Tapwater RBC (ug/L)	July 23, 1991 NUS SI (12/5/90 sample) (ug/L)	08/87 sample	11/87 sample	2/88 sample
Arsenic	10	0.045	57.50	11.4, 76.2, ND, 13.6	11.3, 68.5, ND, 15.4	ND, 58.6, ND, 12.7
				MW-2A, -2B, -3A, - 3B	MW-2A, -2B, -3A, - 3B	MW-2A, -2B, -3A, - 3B

During the Keystone Environmental Resources report sampling, above, the arsenic level were consistently below detection limits (ND) at MW-3A. One well, MW-2B, located in the marshy area to the west of the site, consistently exceeded the pre-2002 Federal Drinking Water MCL of 50 ug/L. The level of contamination in this well appeared to be trending downward and a more recent analysis confirmed this. The most recent sample result available from this well (1993) showed a dissolved arsenic level at 28.2 ppb (PADER letter of 4/8/93). Following the March 1993 results, the company appealed to be relieved from the quarterly sampling requirement and this request was approved (Refer to Appendix F in the 2001 RCRA Site Inspection Koppers Co.-Hodge Foundry report prepared by the US Army Corps of Engineers, Norfolk District, for PADER letter of 6/8/93). No subsequent sampling has been performed. Effective February 2002, the Federal Drinking Water MCL for Arsenic 10 ug/l.

Quarterly sampling at these wells for other contaminants, including phenols, PO4, NH3, Total Cr, Cr +6, F, and Mn produced no exceedances above regulatory limits. PADER letter of April 8, 1993 also stated that (other than the declining As level) "all other parameters have indicated there is no degradation of the groundwater". For additional information, please refer to the 2002 RCRA Site Inspection Koppers Co.-Hodge Foundry report prepared by the US Army Corps of Engineers, Norfolk District.

Groundwater samples collected during the December 1990 NUS Site Investigation (NUS SI July 23, 1991 Report) revealed PAHs in downgradient wells exceeding the EPA Region III Tap Water RBC and the Federal Drinking Water MCL.

Organics

Groundwater			
Contaminant	**MCL (ug/L)**	**Tap Water RBC (ug/L)**	**12/5/1990 sample (ug/L)**
Benzo(a) pyrene	0.2	0.0092	5
Benzo(k)fluoranthene	na	0.92	10
Benzo(b)fluoranthene	na	0.092	7

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

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

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"[2]).

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

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

Rationale and Reference(s): Refer to Page 2 of this EI Form. Although arsenic and PAHs were found in the groundwater at Koppers - Hodge Foundry at concentrations exceeding the Region III Tap Water and the Federal Drinking Water MCLs, the locations of the wells are such that any plume advancing towards the river (west, the direction of shallow groundwater flow) would very likely be intercepted by the perennial stream that borders the area of wells. This stream's flow, in turn, discharges directly into the Little Shenango River via a NPDES Permitted outfall and no elevated levels of Arsenic and PAHs have been noted here.

For additional information, please refer to the 2001 RCRA Site Inspection Koppers Co.-Hodge Foundry report prepared by the US Army Corps of Engineers, Norfolk District.

[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):

Refer to previous page of this EI Form. There is no evidence of contaminated groundwater discharge to either the perennial stream or the Little Shenango River.

For additional information, please refer to the 2001 RCRA Site Inspection Koppers Co.-Hodge Foundry report prepared by the US Army Corps of Engineers, Norfolk District.

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

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

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

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

Rationale and Reference(s): As noted in the previous section, no evidence of contaminated groundwater discharge to either the perennial stream or the Little Shenango River. The effluent of the stream is monitored at the outfall to Little Shenango River and not problems have been documented for the only inorganic contaminant of concern, arsenic. This would certainly imply that any actual discharge to either the stream or the river is insignificant.

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

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

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

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

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

Rationale and Reference(s):_____

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

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

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

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):

As and PAHs are identified as being above regulatory levels. However, the location of the wells is such that any advancing plume towards the river would probably seep into the perennial stream that borders the area of wells. As noted in previous sections, there is no evidence of contaminated groundwater discharge to either the perennial stream or the Little Shenango River. However, since the data is old, groundwater sampling of all monitoring wells for arsenic and PAHs will be perform to obtain current data.

For additional information, please refer to the 2001 RCRA Site Inspection Koppers Co.-Hodge Foundry report prepared by the US Army Corps of Engineers, Norfolk District.

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

X 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" the **KOPPERS CO.-HODGE FOUNDRY** facility, EPA ID # **PAD 00 432 3796**, located at **42 LEACH ROAD, GREENVILLE, PA 16125.** Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring (via the facility outfall to the Little Shenango River) will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

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

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

Completed by (signature) _____ Date: 08-26-02
Tran Tran
Remedial Project Manager

Supervisor (signature) _____ Date: 08-26-02
Paul Gotthold
PA Operations Branch Chief
EPA, Region 3

Locations where References may be found:

Necessary references can be located at USEPA Region III headquarters in Philadelphia, PA. A summary of all available investigations to date is presented in the Environmental Indicator Investigation Report For Koppers Co.-Hodge Foundry (January 2002), prepared by the US Army Corps of Engineers, Norfolk District.

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