

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**  
**RCRA Corrective Action**  
**Environmental Indicator (EI) RCRIS code (CA750)**

**Migration of Contaminated Groundwater Under Control**

**Facility Name:** Koppers Inc.  
**Facility Address:** 50 Koppers Lane, Montgomery, Pennsylvania  
**Facility EPA ID #:** PAD 056 723 265

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 "Current Human Exposures Under Controls" 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 "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated groundwater 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).

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

2. Is **groundwater** known or reasonably suspected to be "contaminated"<sup>4</sup> 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 anywhere at, or from, the facility?

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

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

If unknown (for any media) – skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Groundwater in this area generally flows in the south-southeast direction, at approximately 0.02 ft/ft toward the West Branch of the Susquehanna River (A.T. Kearney, Inc., August 22, 1986). Water levels are approximately 13 feet below ground surface. This uppermost aquifer is under unconfined conditions. The upper portion of this sand and gravel unit is not saturated.

According to the Montgomery Water and Sewer Authority (TTFW, 2003), two private wells are within 50 to 100 yards of the facility, one to the north and one to the west. Approximately 1 ½ to 2 miles west of the facility are the Montgomery Water and Sewer Authority source wells. Approximately 500 yards east of the facility is a community where some residents maintain private wells. A Feed Mill located approximately 1 mile east of the facility and a farm approximately 500 yards south of the facility both maintain private wells.

The Koppers, Inc. (Koppers) facility uses groundwater as the source of process water and tap water. Groundwater is not the source of potable water for Koppers employees. Facilities retaining over 25 employees are required to chlorinate drinking water and since the facility employs more than 25 people and is not equipped with the appropriate equipment for chlorination, bottled water is provided.

In November 1981, Koppers Company, Inc (Koppers) (now known as Beazer East, Inc) installed a RCRA Interim Status Groundwater Monitoring System in the vicinity of the now closed surface impoundments. Monitoring well R-1 was installed in a presumed upgradient location and three wells (R-2, R-3 and R-4) in presumed down gradient locations.

In October 1982, during a Groundwater Quality Assessment field investigation four new monitoring wells (M-1, M-2, M-3 and M-4) were installed around the perimeter of the impoundments. Monitoring well M-1 was installed upgradient of the impoundments and wells M-2, M-3 and M-4 were installed downgradient of the impoundments.

The closure of the former surface impoundments was completed by Beazer 1988-1989. As part of the closure, groundwater was monitored through 2006. For purposes of Clean Closure demonstration to PADEP, additional monitoring wells were installed and quarterly sampling and analysis was completed from 2004-

<sup>4</sup>"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).

2006. In October 2006, Key Environmental, Inc. submitted an Act 2 Final Report for the Closed Surface Impoundment. This report demonstrated attainment of the Act 2 State-Wide Health Standard (SWHS) for surface impoundment subgrade soil and groundwater downgradient of the surface impoundment, and therefore, demonstrated clean closure of the impoundment. Clean Closure was approved by PADEP on January 9, 2007.

A former spray irrigation field operated from 1972 to 1988. During a subsurface investigation in November 1981, five groundwater observation wells, known as the S-series wells (S-1, S-2, S-3, S-4 and S-5), were installed within and adjacent to the spray field. On June 10, 1988, on behalf of Koppers, Keystone Environmental Resources, Inc., submitted a Closure Plan to PADEP for the spray irrigation field. Closure commenced following closure of the surface impoundments and consisted of connecting the spray irrigation system to a potable water source and operating the spray system for eight hours in order to flush the distribution lines and spray heads. Groundwater sampling and analysis was conducted from 1988-1989. After an April 30, 2008 meeting at the Facility between EPA, PADEP, Beazer, and Koppers, these data were forwarded to EPA by Key Environmental. The last sampling events for groundwater data indicate that there is no impact above either EPA's or PADEP's cleanup standards in the former sprayfield area.

References:

Closure Plan for the Spray Irrigation Field, Keystone Environmental Resources, Inc., June 10, 1988

Groundwater Quality Assessment Report, The Retec Group, Inc., November 13, 2003

Environmental Indicator Inspection Report, Tetra Tech FW, Inc., December, 2003

Act 2 Final Report for the Closed Surface Impoundment, Key Environmental, Inc., October 2006

**Migration of Contaminated Groundwater Under Control**  
**Environmental Indicator (EI) RCRIS code (CA750)**

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"<sup>5</sup> 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"<sup>2</sup> )

\_\_\_\_\_ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"<sup>2</sup>) - 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):

---

<sup>5</sup> "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.

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS 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):

---

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS Code (CA750)**

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration<sup>6</sup> 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<sup>3</sup> 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 judgment/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 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<sup>3</sup> greater than 100 times their appropriate "level(s)," and if 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):

---

<sup>6</sup> As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS 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 implemented<sup>7</sup>)?

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<sup>8</sup> 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 a "NO" status, 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):

---

<sup>7</sup> 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.

<sup>8</sup> 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.

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

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): \_\_\_\_\_




**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

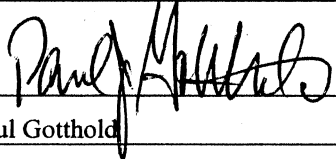
8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

  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" at the Koppers Inc. facility, EPA ID # PAD 056 723 265, located at 50 Koppers Lane Montgomery, PA. This determination will be re-evaluated if 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 11/4/10  
(print) Kevin Bilash  
(title) RCRA Project Manager

Supervisor: (signature)  Date 11-16-10  
(print) Paul Gotthold  
(title) Associate Director, Office of PA Remediation  
(EPA Region or State) Region 3

Locations where References may be found:

All reference documents are appended to the Environmental Indicator Final Report,  
which can be found at the PADEP North Central Records Office (in Williamsport) or  
USEPA Region III Records Office (in Philadelphia).

Contact telephone and e-mail numbers:

(name) Kevin Bilash  
(phone #) (215) 814-2796  
(e-mail) bilash.kevin@epa.gov

Facility Name: Koppers Inc.  
EPA ID #: PAD 056 723 265  
Location: 50 Koppers Lane Montgomery, PA

### MIGRATION OF CONTAMINATED GROUNDWATER UNDER CONTROL (CA 750)

