

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**

Interim Final 2/5/99

**RCRA Corrective Action**

**Environmental Indicator (EI) RCRIS code (CA725)**

**Current Human Exposures Under Control**

**Facility Name:** CSX Transportation, Incorporated (Former Koppers Company Site)  
**Facility Address:** 4005 Charles City Road, Richmond, VA 23231  
**Facility EPA ID #:** VAD 00 312 1977

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, GPRAs). 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 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).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “contaminated”<sup>1</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 (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	<u>X</u>	---	---	Pentachlorophenol, pyrene, acenaphthene, etc.
Air (indoors) <sup>2</sup>	---	<u>X</u>	---	No indoor air pathway associated with AOCs/Site
Surface Soil (e.g., <2 ft)	<u>X</u>	---	---	Benzo(a)anthracene, fluoranthene, 2,4-Dinitrophenol
Surface Water	<u>X</u>	---	---	Anthracene, 4,6-Dinitro-2-methylphenol, etc.
Sediment	<u>X</u>	---	---	Benzo(a)anthracene, Phenanthrene, Benzo(a)pyrene
Subsurf. Soil (e.g., >2 ft)	<u>X</u>	---	---	Pentachlorophenol, pyrene, acenaphthene, etc.
Air (outdoors)	---	<u>X</u>	---	No known or reasonably suspected impacts above risk based levels from AOCs

----- 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):**

1. Groundwater has been sampled at the site since 1981 with area specific sampling completed between 1993 and 1996. This data indicates that groundwater is impacted in specific portions of the site above EPA Region III tapwater RBCs and above site-specific risk-based action levels for both industrial and residential use. The contaminants of concern that are present above the site-specific risk-based action levels are described on Table 5-16 in the Human Health Risk Assessment Report dated 7/19/99.
2. No indoor air pathways are associated with this site - see Human Health Risk Assessment Report dated July 19, 1999.
3. Over 200 soil samples (surface and subsurface) were collected between 1983 and 1996 from each area previously used for wood treatment activities. This data indicates that soils are impacted in several portions of the site above EPA Region III residential RBCs and above site-specific risk-based action levels. The contaminants of concern that are present above the site-specific risk-based action levels are described on Table 5-12 in the Human Health Risk Assessment Report dated 7/19/99.
4. Surface water impacts - See Table 5-9 in the Ecological Assessment Report dated 8/5/99.
5. Sediment impacts - See Table 2-4 in HHRA Report for AOC 6 and Table 5-11 in EA Report for onsite wetlands areas/drainage ditches. Note that site-related sediment contaminants have been detected in offsite areas to the south.
6. Subsurface soils - See note #3 above - subsurface soil findings included in #3.
7. Based on known groundwater and soil/sediment concentrations, no outdoor air concentrations are known or reasonably expected to be above appropriate risk based levels.

Footnotes:

<sup>1</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 appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> 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.

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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)

<b><u>“Contaminated” Media</u></b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	No	No	No	No		No	
Soil (surface, e.g., <2 ft)	Yes	Yes	No	No	Yes	No	No
Surface Water	No	No			Yes		
Sediment	No	No			Yes		
Soil (subsurface e.g., >2 ft)	No	No		No	No		
Air (outdoors)	No	No	No	No			

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.
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 check spaces (“\_\_\_”). 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):**

**1.** Although contaminants are present in groundwater at concentrations that exceed risk-based action levels for both industrial and residential use, the groundwater pathway is not applicable for daycare, trespassers, and food due to current and future site use as industrial (part of Eastport Industrial Park). Groundwater pathway for workers and residents is not complete since public water supply is readily available in area and would be expected to be used for drinking water. See HHRA Report dated July 19, 1999.

2. Contaminants are present in site soils at concentrations that exceed site-specific risk-based action levels (AOCs 1, 2A, 2B, 3, 5 and 7). The soil pathway is complete for onsite workers [environmental study] and child trespassers. Onsite workers are expected to control exposure using protective gear and following site-specific health and safety plan. See HHRA Report dated July 19, 1999.
3. Depending upon which portion(s) of site are accessed by child trespassers, additional risk may be caused by contact with contaminated sediments and surface water present at the site (See #2 above, and the HHRA Report and EA Report dated 7/19/99 and 8/5/99, respectively).
4. Offsite exposure by nearby residential children to surface soil-derived chemicals could also occur due to wind transport of fugitive dust emissions, however no significant risk is associated with this pathway. See HHRA Report dated July 19, 1999.

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

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**<sup>4</sup> (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.”

**X** 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):**

1. Surface soil risks were estimated to be  $6.6 \times 10^{-5}$  for child trespassers which is within EPA’s target risk range for carcinogens; and a noncarcinogenic hazard index of 0.11. These risks are below the target non-cancer hazard index of 1, or are within the cancer risk range of  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$  considered to be the threshold for remedial action by EPA. See HHRA Report dated 7/19/99 and EPA Memorandum dated 9/17/01.

2. Surface soil risks were estimated to be  $2 \times 10^{-6}$  for offsite resident children which is within EPA’s target risk range for carcinogens. See HHRA Report dated 7/19/99.

<sup>4</sup> 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.

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

  X   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):** Although current exposure to site conditions could pose a risk to child trespassers and offsite resident children, the estimated risk levels are within EPA’s cancer risk range of  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$  and below EPA’s target noncancer hazard index of 1. Trespassing by children is assumed to occur at the site, even though there is no evidence that it occurs, there are no onsite features that would encourage trespassing, and the site does not represent a useful thoroughfare between offsite destinations. Current onsite exposure could also occur for environmental study workers, however, EPA considered it reasonable to assume that such workers would take precautions to control exposure while onsite (i.e., protective gear, health and safety plan compliance). See HHRA Report dated July 19, 1999.

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6. Check the appropriate RCRIS 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):

  X   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 **CSXT, Incorporated (former Koppers Company Site)** facility, EPA ID # **VAD 00 312 1977**, located at **4005 Charles City Road, Richmond, Virginia** 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) \_\_\_\_\_    Date 09-19-01  
                  (print)     Donna M. McCartney  
                  (title)     Remedial Project Manager

Supervisor     (signature) \_\_\_\_\_    Date 09-27-01  
                  (print)     Robert E. Greaves  
                  (title)     Chief, General Operations Branch  
                  (EPA Region or State) EPA, Region 3

**Locations where References may be found:**

EPA - Region III - 11<sup>th</sup> Floor RCRA Fileroom  
1650 Arch Street  
Philadelphia, PA. 19103-2029

**Contact telephone and e-mail numbers:**

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**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.**