

# DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

## RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725)

### Current Human Exposures Under Control

**Facility Name:** Solutia Nitro Site  
**Facility Address:** #1 Plant Road  
**Facility EPA ID #:** WVD 039 990 965

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

- If yes - check here and continue with #2 below.  
 If no - re-evaluate existing data, or  
 If data are not available skip to #6 and enter "IN" (more information needed) status code.

This CA725 Current Human Exposures Under Control Environmental Indicator Report (EIR) is based on the following information sources:

- Geraghty & Miller, Inc., 1985. Groundwater Assessment – Waste Water Treatment Plant, May 1985.
- Geraghty & Miller, Inc., 1985. Groundwater-Water Quality Investigation at the Monsanto Plant, October 1985.
- Roux Associates, Inc., 1993. Revised Final Verification Investigation Report, August 24, 1993.
- Roux Associates, Inc., 1995 RFI Report and Stabilization /Corrective Measures Plan, May 5, 1995. This report contains investigation results from:
  - Soils at the Building 46 incinerator;
  - Soils along the river bank
  - Sediments from the river along the Past Disposal Area (PDA)
  - Surface water samples from the river along the PDA

- Groundwater Monitoring well results
- Roux Associates, Inc., 1996. Stabilization/Corrective Measures Study Report, February 29, 1996.
- Roux Associates, Inc., 1998. Summary of Ground-Water Sampling and LNAPL Monitoring Data, September 25, 1998.
- Roux Associates, Inc., 1999. Stabilization/Corrective Measures Effectiveness Report, January 25, 1999.
- Roux Associates, Inc., 2000, Response to USEPA Comments of Corrective Measures Effectiveness Report, May 12, 2000.
- Roux Associates, Inc., 2001. Evaluation of Environmental Indicator for Migration of Contaminated Ground-Water Under Control – RCRIS Code CA750, Solutia, Inc. Facility, December 2001.
- Roux Associates, Inc., 2001. Report on Phase IA Activities, December 28, 2001.
- Potesta & Associates, Inc. , 2003, Kanawha River Sediment and Surface Water Sampling Final Report; Kanawha River Reach, Flexsys America, L. P. Facility, Nitro WV, March 2003
- Potesta & Associates, Inc., 2003, Documentation of Environmental Indicators Determinations Report, RCRA Corrective Action EI RCRIS Code CA-750 Migration of Contaminated Groundwater under Control, December 2003. This report consisted of the EI Questionnaire, a Data Report and a Data Validation Report
- Potesta & Associates, Inc., 2004, Revised Data Report, CA-750 Groundwater Environmental Indicators, May 2004.

## **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, GPR). 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)?

Media	Yes	No	?	Rationale / Key Contaminants
Groundwater	<u>X</u>	—	—	<p>Screening of the site wide GW data base against the WV Groundwater Protection Standards showed results for the following in excess of this screening criteria: Carbon Tetrachloride, Di (2-ethylhexyl) phthalate, 1,1-dichloroethylene, dichloromethane, 1,2-dichloropropane, tetrachloroethylene, pentachlorophenol, trichloroethylene, vinyl chloride, xylenes and several metals.</p> <p>Groundwater is not used for drinking or for any other purpose.</p>
Air (indoors) <sup>2</sup>	—	<u>X</u>	—	<p>There are no structures over contaminated soils and groundwater. This is a non-operating site. All manufacturing has ceased, the facility has been decommissioned, and demolition is underway. Limited personnel remain on site and this number will be reduced to zero by June 2005 when demolition will be completed.</p>
Surface Soil (e.g. < 2 ft)	<u>X</u>	—	—	<p>Screening of the PDA soils data base against the EPA Region 3 RBC Table (industrial) showed results for the following in excess of this screening criteria: Arsenic, 1,2-dibromomethane, Benzo(a)pyrene, Benzo(b)fluoranthene, and trichloroethylene and 2,3,7,8-dioxin (TCDD).</p>



Media	Yes	No	?	Rationale / Key Contaminants
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Surface Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	There are no surface water features on site. Analytical results of water samples collected from the Kanawha River did not reveal exceedances of AWQCs.
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Sediment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comparing VOC and SVOC results in Kanawha River sediments at the site's western boundary to the EPA Region 3 RBC table for soils (industrial) resulted in no exceedances. Comparison of 2,3,7,8-dioxin (TCDD) sediment concentration results - using sediments from the river boundary - resulted in exceedances using this same screening criteria.
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Subsurf. Soil (e.g., >2 ft)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Screening of the PDA subsurface soils data base against the EPA Region 3 RBC Table (industrial) showed results for the following in excess of this screen: Arsenic, 1,2-dibromomethane, Benzo(a)pyrene, Benzo(b)fluoranthene, and trichloroethylene and 2,3,7,8-dioxin (TCDD)
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Air (outdoors)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	This is a non-operating site. Plant dismantlement will be completed by June 2005.
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If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

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

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

**Rational and References:** See information under the Rational/Key Contaminants for each pathway.

**Reference(s):**

Groundwater – May, 2004 Revised Data Report, CA-750 Groundwater Environmental Indicators.

Surface Soil (e.g., <2 ft) – NUS 1984 Site Investigation; NUS August-September 1983 Site Investigation.

Sediments - May, 2004 Revised Data Report, CA-750 Groundwater Environmental Indicators; EPA’s September 2001 CERCLA Sediment Study Data Report.

**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)

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

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.

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



- \_\_\_\_\_ 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**

Overall - Groundwater is not used for drinking water or for any other purpose.

Residents – There are no residences on site.

Workers – The Site is now a closed non-operating facility and dismantling will be completed by June 2005. There are currently approximately 40 dismantling and supervisory personnel on site. There is no exposure to groundwater. Some sampling of groundwater will continue to be required – but this will be performed with specially trained and supervised workers performing the work under an approved HASP.

Day-Care – There are no day-care facilities on site

Construction-Dismantling – There is no construction planned on the Site. Any remediation that would be contemplated would be approved by the Agencies and performed with qualified workers pursuant to an approved HASP. Demolition of all site facilities is currently underway – but there is no potential for contact with groundwater during remedial activities.

Trespassers – Site is fenced and actively managed.

Recreation – There are no recreational facilities on site.

Food – No food is produced on site

**Soil (surface, e.g., <2 ft)**

Residents – There are no residences on site.

Workers – The Site is now a closed non-operating facility and dismantling will be completed by June 2005. Effective June 2005, there will be no workers remaining on site.

Day-Care – There are no day-care facilities on site

Construction-Dismantling – Demolition of all site facilities is currently underway. The work is being conducted pursuant to a Health and Safety Plan prepared by the demolition contractor (Remediation) and approved by Flexsys. The HASP is available for review by USEPA / WVDEP.

Trespassers – Although the Site is fenced, trespassers could potentially gain access to the Site. The river bank is not fenced.

Recreation – There are no recreational facilities on site.

Food – No food is produced on site

**Sediments**

Residents – There are no residences on site.

Workers – The Site is now a closed non-operating facility and dismantling will be completed by June 2005. Effective June 2005, there will be no workers remaining on site.

Day-Care – There are no day-care facilities on site

Construction- Dismantling – There is no construction planned on the Site. Any remediation that would be contemplated would be approved by the Agencies and performed with qualified workers pursuant to an approved HASP.

Trespassers – A trespasser could potentially come into contact with contaminated sediments at the river's boundary with the Site.

Recreation – A recreational fisher could potentially come into contact with contaminated sediments at the river's boundary with the Site.

Food – No food is produced on site. However, fish taken from the Kanawha River in the vicinity of the site are known to be contaminated with 2,3,7,8 - dioxin (TCDD). Fish advisories are posted along the river in the vicinity of the site and an outreach program will provide additional information alerting the local population to the TCDD contamination.

**Soil (subsurface e.g., >2 ft)**

Residents – There are no residences on site.

Workers – The Site is now a closed non-operating facility and dismantling will be completed by June 2005. Effective June 2005, there will be no workers remaining on site.

Day-Care – There are no day-care facilities on site

Construction-Dismantling – There is no construction planned on the Site. Any remediation that would be contemplated would be approved by the Agencies and performed with qualified workers pursuant to an approved HASP. Demolition of all site facilities is currently underway. No intrusive activity into subsurface soils is anticipated during the demolition.

Trespassers – Trespassers would not be expected to come into contact with subsurface soils.

Recreation – There are no recreational facilities on site.

Food – No food is produced on site.

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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)?

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

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

\_\_\_\_\_ If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

**Rationale and Reference(s):**

*Soil (surface, e.g., <2 ft) / Construction-Dismantling* – The dismantling work is being performed by specially trained and supervised personnel and pursuant to a Health and Safety Plan which is available for review by the Agencies. Use of appropriate health and safety measures will prevent completion of this potential exposure pathway.

*Soil (surface, e.g., <2 ft) / Trespassers* – The Site is fenced. Accessing the river bank from the river is possible but the river bank and site are not easily accessible. Some intrusive behavior would also have to occur before an exposure pathway would be completed and is unlikely to occur because of heavy vegetation, the steep and rough bank, and the absence of a beach or docking area. During the dismantling phase, the Site will be monitored by site personnel. Following dismantling, periodic checks of the fence will be conducted to insure

continued integrity of the perimeter fencing. Consequently, exposure cannot reasonably be expected.

Soil (surface, e.g., <2 ft) / Recreation – A recreational fisher could potentially come into contact with riverbank soils. However, this has not been observed and is unlikely to occur because of heavy vegetation, the steep and rough bank, and the absence of a beach or any docking area. Consequently, exposure cannot reasonably be expected.

Sediment / Trespassers - A trespasser could potentially come into contact with river sediments along the river at the western boundary of the Site. However, this is unlikely to occur because access to the river from the river bank is difficult because of heavy vegetation, the steep and rough bank, and the absence of a beach or any docking area. Consequently, exposure cannot reasonably be expected.

Sediment / Recreation - A recreational fisher could potentially come into contact with river sediments along the river at the western boundary of the Site. However, this is unlikely to occur because of heavy vegetation, the steep and rough bank, and the absence of a beach or any docking area. Consequently, exposure cannot reasonably be expected.

<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?

  N/A 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).

  N/A 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.

  N/A If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

**Rationale and Reference(s):**

No “Significant” exposures were identified in # 4.

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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):

- 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 Solutia Nitro facility, EPA ID # WVD 039 990 965, located at #1 Plant Road, Nitro, WV 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) \_\_\_\_\_/s/\_\_\_\_\_ Date 9/7/04

(print) Bill Wentworth

(title) Remedial Project Manager

Supervisor (signature) \_\_\_\_\_/s/\_\_\_\_\_ Date 9/7/04

(print) Bob Greaves

(title) Chief, General Operations Branch

(EPA Region or State) Region III

**Locations where References may be found:**

EPA Region III RCRA File Room

1650 Arch Street

Philadelphia, Pa. 19103

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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.**