

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: CYTEC Industries, Inc.  
Facility Address: #1 Heilman Avenue, Willow Island, WV 26134  
Facility EPA ID #: WVD 00 434 1491

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.

**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 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                 | X          |           |          | See notes below.  |
| Air (indoors) <sup>2</sup>  |            | X         |          |   |
| Surface Soil (e.g., <2 ft)  |            | X         |          |   |
| Surface Water               | X          |           |          | <b>Metals detected in Oxbow Lake in the Area west of Cow Creek</b>                            |
| Sediment                    | X          |           |          | <b>Metals detected in Oxbow Lake Area west of Cow Creek</b>                                   |
| Subsurf. Soil (e.g., >2 ft) | X          |           |          | <b>Metals, cyanide, benzene, PAHs detected in the Process Area and Area west of Cow Creek</b> |
| Air (outdoors)              |            | X         |          |   |

\_\_\_\_\_ 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): For the purpose of this EI determination the Cytec Willow Island facility was divided into three areas based on geographical layout, physical setting, and operations. These areas include:**

- **The plant process area, including the two boiler fly ash disposal areas, an incinerator ash disposal impoundment and the wastewater treatment facility. This area is bounded on the north by the Ohio River, on the west by Cow Creek, to the south by State Rt. 2, and to the east by the facility property boundary.**
- **The area west of Cow Creek. This area includes Solid Waste Management Units (SWMUs) GG-2 and GG-3, and is bounded on the north by the Ohio River, on the east by Cow Creek, on the south by State Rt. 2, and on the west by the facility property boundary.**
- **The landfill area south of State Rt. 2. This area is bounded on the north by State Rt. 2, and undeveloped property on the remaining three sides, and is comprised of several closed landfills. (Note that although wastes are left in place in the landfill area, these units have been closed in accordance with RCRA requirements and post-closure groundwater performance monitoring is ongoing.)**

**Groundwater - Metals, VOCs including: acetone, benzene, toluene, methylene chloride, and SVOCs including nitrosodiphenylamine and nitrobenzene have been detected in the Area west of Cow Creek. Metals, benzene and cyanide have been detected in the Process Area.**

**“Cyanide” refers to complex cyanide. No free cyanide has been detected at the facility.**

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**References include:**

**“Report of Findings, Hydrogeologic Investigation in the Vicinity of Building 82,” March 1993**  
**“RCRA Facility Investigation Report - Solid Waste Management Units GG-2 and GG-3,” December 1994**  
**Groundwater Monitoring Data for the CN and Benzene Plumes.**

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**

| <b><u>“Contaminated” Media</u></b>        | Potential <b><u>Human Receptors</u></b> (Under Current Conditions) |         |          |                  |             |            |                   |
|---|--|---------|----------|------------------|-------------|------------|-------------------|
|   | Residents  | Workers | Day-Care | Construction     | Trespassers | Recreation | Food <sup>3</sup> |
| Groundwater                               | No   | No      | No       | No               |             |            | No                |
| <del>Air (indoors)</del>                  | ---  | ---     | ---      |                  |             |            |                   |
| <del>Soil (surface, e.g., &lt;2 ft)</del> | ---  | ---     | ---      | ---              | ---         | ---        | ---               |
| Surface Water                             | ---  | No      |          |                  | No          | No         | No                |
| Sediment                                  | ---  | No      |          |                  | No          | No         | No                |
| Soil (subsurface e.g., >2 ft)             |  |         |          | No <sup>3a</sup> |             |            | No                |
| <del>Air (outdoors)</del>                 | ---  | ---     | ---      | ---              | ---         | ---        |                   |

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.

X 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).

\_\_\_\_\_ 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: There are no groundwater receptors on or downgradient of the facility property. Groundwater discharges to either the Ohio River or to Cow Creek at or near the property boundaries.**

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**Surface Water and Sediment: The facility is fenced to minimize the potential for trespassers.**

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

<sup>3a</sup> Construction workers could potentially be exposed to contaminated subsurface soils during excavation. However, construction workers can be reasonably protected from the contaminated sub-surface soils pathway by complying with facility policies and procedures which are in place for all construction work. This would include:

- Work permit procedures;
- Hot work procedures; and,
- Confined space entry for excavation.

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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.”

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

<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?

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

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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 **CYTEC Industries, Inc.** facility, EPA ID # **WVD 00 434 1491**, located at **#1 Heilman Avenue, Willow Island, WV 26134** 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   09-05-02  
                                  (print)      Russell H. Fish  
                                  (title)      Remedial Project Manager

Supervisor        (signature) \_\_\_\_\_                                      Date   09-19-02  
                                  (print)      Robert E. Greaves  
                                  (title)      Chief, General Operations Branch  
                                  (EPA Region or State)   EPA, Region 3

**Locations where References may be found:**

U.S.EPA Region III, File Room.  
West Virginia Department of Environmental Protection.

**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.**