

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: Union Carbide Corporation, Private Trucking Operations
Facility Address: State Route 25, Nitro, WV 25143
Facility EPA ID #: WVD 00 073 9722

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”**¹ 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 information below.
Air (indoors) ²		X		Not Applicable - No remaining structures other than unoccupied treatment or equipment sheds.
Surface Soil (e.g., <2 ft)		X		Most surface soil (< 2 feet) consists of cover material (e.g. clay, asphalt, and concrete).
Surface Water		X		No surface water impacts above groundwater RBCs in the adjacent stream , Ryans Branch.
Sediment		X		No sediment impacts were detected above Industrial Soil RBCs in Ryans Branch.
Subsurf. Soil (e.g., >2 ft)	X			See information below.
Air (outdoors)		X		The site has been capped (clay or asphalt) plus no unacceptable shallow (<2 feet) soil impacts have been detected.

_____ 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/Key Contaminants: The key contaminants detected for Groundwater above EPA Region III’s Risk Based Concentrations (RBC) include VOCs (acetone, benzene, 1,2 dichloroethane, carbon tetrachloride, chloroform, cis-1,2-dichloroethene, ethylbenzene, toluene, tetrachloroethene, trichloroethene and vinyl chloride), and semi-volatile organic compounds (bis(2-chloroethyl)ether, 4-methylphenol, isophorone, naphthalene, dibenzofuran, fluorene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, bis(2-ethylhexyl)phthalate and di-n-octylphthalate) and metals (arsenic, barium, chromium and lead).

The key contaminants detected above RBCs for the Subsurface Soil (e.g., >2 ft) include bis(2-ethylhexyl)phthalate, benzo(a)anthracene, benzo(b)fluoranthene and benzo(a)pyrene.

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

² 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.

References:

For specific concentrations of compounds above Groundwater RBCs in groundwater, refer to the following:

RCRA Facility Investigation Report, Union Carbide Corporation, Private Trucking Operations Facility, Nitro, WV, January 2002, Tables 5, 7, 9, 10 and 13
2001 Annual Groundwater Assessment Monitoring Report, Union Carbide Corporation, Former Private Trucking Operations Terminal, February 2002

For specific concentrations of compounds above Industrial Soil RBCs in subsurface soil, refer to the following:

RCRA Facility Investigation Report, Union Carbide Corporation, Private Trucking Operations Facility, Nitro, WV, January 2002, Tables 4 and 6

Facility Background: Union Carbide Corporation (UCC) formerly operated a private trucking operations (PTO) facility along State Route 25 approximately two miles west of Institute, West Virginia. The PTO facility was constructed in 1976 as a cleaning facility for tanker trucks and railcars for UCC's fleet and sold services to other companies. The PTO facility was taken out of service in 1985. Prior to construction of the PTO facility, the site was used for solid waste management. Between 1942 and the early 1970s, the area was used for the disposal and storage of chemical by-products and construction debris generated mainly by the UCC Institute Plant. Portions of the area have been leveled and capped to prevent surface ponding and subsurface migration.

The UCC PTO Facility is conducting corrective action in accordance with EPA Region III's Facility Lead Program. A RCRA Facility Investigation (RFI) has been conducted and a RFI Report issued in January 2002. RFI field investigation activities completed for the PTO facility include historical and hydrologic data reviews as well as soil and groundwater investigations targeting the former clay-lined ponds, drum disposal areas, western landfills, and the former incinerator and drum storage areas. Surface water and sediment sampling was conducted along Ryans Branch downgradient of the PTO facility. In addition, all existing monitoring wells at the PTO facility were sampled as part of the RFI.

To date, UCC has completed a number of interim measures at the former PTO facility. These interim measures include the following:

- Closure of former RCRA surface impoundments through cleaning, dewatering, stabilization/solidification or remaining wastes and capping;
- Installation, operation, maintenance and expansion of a groundwater recovery system downgradient of the former clay-lined ponds;
- Installation, operation and maintenance of an eastern perimeter remediation system consisting of a cutoff wall and two collection wells to contain and control PTO site impacts to the east;
- Installation, operation and maintenance of an interceptor trench system south of the groundwater recovery well system to further protect adjacent surface water bodies;
- Regrading and capping of areas of the PTO site to improve site drainage characteristics and minimize surface water infiltration;
- Quantification and removal of asbestos-containing materials such as floor tile/mastic, pipe insulation and transite panels;
- Cleaning and removal of seven aboveground storage tanks; and
- Demolition of the former PTO facility structures and piping.

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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

“Contaminated” Media	Potential Human Receptors (Under Current Conditions)						
	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	NO	YES	NO	YES	----	----	NO
Air (indoors)	----	----	----	----	----	----	----
Soil (surface, e.g., <2 ft)	NO	NO	NO	YES	NO	NO	NO
Surface Water	----	----	----	----	----	----	----
Sediment	----	----	----	----	----	----	----
Soil (subsurface e.g., >2 ft) (outdoors)	NO	NO	NO	YES	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: A Site Conceptual Exposure Model (SCEM) was developed as part of the RFI process. Based upon comparison of site soil and groundwater concentrations with RBCs, constituents of potential concern (COPCs) were identified for media of interest in each area of investigation. Potential exposure pathways and receptors for each area of investigation were then evaluated for each media of interest. From this process, complete exposure pathways and associated receptors were identified.

Reference(s): RCRA Facility Investigation Report, Union Carbide Corporation, Private Trucking Operations Facility, Nitro, WV, January 2002, Tables 15, 17, 19, 21, 23, 25, and 26

³ 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”**⁴ (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): The only potential exposures are ingestion, inhalation or dermal contact for construction (excavation) and/or O&M workers (e.g., during sampling activities). These potential exposures are deemed to be insignificant because these workers are covered under a site-specific Health and Safety Plan (HASP). The HASP provides for evaluations of potential hazards and exposures and specifies appropriate personal protective equipment (PPE) to minimize or eliminate these hazards and exposures. In addition, other administrative controls are in place at the PTO facility to further minimize or eliminate exposures. These administrative controls include a hazard identification program, Hazcom procedures and multi-level safety auditing and oversight.

Several engineering controls are also in place. These include capping of former waste management units, site perimeter fencing, and a site groundwater recovery system. Monthly inspections of the perimeter fencing are conducted to insure that gates are properly locked, the fencing is not damaged and no unauthorized personnel enter the site. No Trespassing signs are also posted at regular intervals along the perimeter fencing. Unauthorized site access is further controlled via 24-hour video surveillance and periodic inspection by security personnel.

⁴ 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 **Union Carbide Corporation's PTO** facility, EPA ID # **WVD 00 073 9722**, located at **State Route 25 in Nitro, West 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 09/16/02
 (print) **Denis M. Zielinski**
 (title) **Remedial Project Manager (Senior)**

Supervisor (signature) _____ Date 09/17/02
 (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
1650 Arch Street
Philadelphia, PA 19103-2029

West Virginia Department of Environmental Protection
1356 Hansford Street
Charleston, WV 25301

Union Carbide Corporation
A Subsidiary of The Dow Chemical Company
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3200 Kanawha Turnpike
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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.