

## 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:** Crown Central Petroleum Corporation  
**Facility Address:** 111 Red Bluff Road, Pasadena, Harris County, Texas 77506  
**Facility EPA ID #:** TXD008091290

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	<u>  x  </u>	<u>    </u>	<u>    </u>	<u>Plumes are stable/VOCs, SVOCs, PAHs metals, explosives and perchlorate.</u>
Air (indoors) <sup>2</sup>	<u>    </u>	<u>  x  </u>	<u>    </u>	<u>Assessment conducted to date indicates that exposure route is not a significant pathway</u>
Surface Soil (e.g., <2 ft)	<u>  x  </u>	<u>    </u>	<u>    </u>	<u>Under cover, and/or MSC, ACL or PCL/VOCs, SVOCs PAHs and metals</u>
Surface Water	<u>    </u>	<u>  x  </u>	<u>    </u>	<u>Assessment conducted to date indicates that exposure route is not a significant pathway</u>
Sediment	<u>    </u>	<u>  x  </u>	<u>    </u>	<u>Assessment conducted to date indicates that exposure route is not a significant pathway</u>
Subsurf. Soil (e.g., >2 ft)	<u>  x  </u>	<u>    </u>	<u>    </u>	<u>Under cover, and/or MSC, ACL or PCL/VOCs, SVOCs PAHs and metals</u>
Air (outdoors)	<u>    </u>	<u>  x  </u>	<u>    </u>	<u>Evaluation conducted to date indicates inhalation exposure route is not a significant pathway</u>

     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): *Crown is required to complete HSWA corrective action requirements for nine (9) Solid Waste Management Units (SWMUs) listed in the Compliance Plan CP-50112 for which a RCRA Facility Investigation and/or necessary corrective action are required as result of release or potential release from SWMUs. These nine SWMUs include: SWMU No.1 Tank Fire Walls (consisting of a total of 33 tanks); SWMU No. 2 Buried Cell near the Bauxite Pond; SWMU No. 3 Trap No. 2 Sump (NOR Unit No. 015); SWMU No. 4 Waste Pile Containing Coke at Gate 14 (NOR Unit No. 005); SWMU No. 5 Area immediately surrounding the Bauxite Pond; SWMU No. 6 Dehydrator Tank Fire Walls; SWMU No. 7 Maintenance Area Ditch; SWMU No.8 Detol Pad; and, SWMU No. 9 Sandblast Grit Pad; and, the five Areas of Concern (consisting of Region 1 north of Tank 808, Region 2 north of Tank 824, Region 5 south of Storm water Pond, Region 6 near the Ship Docking on the Houston Ship Channel, and Region 7 near the Washburn Tunnel). RFI reports indicate COCs such as volatile organic compounds (VOCs), SVOCs PAHs and metals were detected in soil and groundwater, and assessment results confirm no off-site contamination. An interim baseline risk assessment was conducted and interim control measures implemented at the above SWMUs and AOCs (e.g., surface cover/cap, soil removal (via excavation) near, access restrictions(fencing), and continued groundwater monitoring under the Compliance Plan), no human exposures to affected soil or groundwater presently occur for the above area. Crown is seeking closure/remediation of the above referenced SWMUs, Areas of Concern and RCRA-regulated units under Risk Reduction Standard (RRS) No. 3 (ACLs which consist of MCLs or MSCs) Groundwater investigation and semiannual groundwater monitoring reports required by the Compliance Plan CP-50112 indicate that the groundwater plumes are stable and shrinking at the RCRA-regulated unit Ponds WMA and the five Areas of Concern. The RCRA-regulated units Storm Water and Bauxite Ponds are included in Crowns Permit and have a soil cover/cap placed over the units at the time of closure as an engineering control thus limiting site worker exposures to affected soil. The Permit HW-50292 requires that Crown submit annual activity reports to verify the engineering control (cap/cover maintenance) and institutional controls are maintained for the ponds during post closure care. The Compliance Plan shall include continued groundwater*

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*monitoring and corrective action at the RCRA-regulated WMA as well as at the five Areas of Concern.*

*Site investigations and/or response actions and closure activities have also been completed for the Loading Rack Area and Weathered Tank Bottom Storage Area under RRS No. 2 (MCLs or MSCs). Investigation results indicate impacts to surface and subsurface soils in which COC concentration either met the proposed action limit, or a response action (e.g. soil removal via excavation,) was needed to meet the action limit, thus limiting exposure of soils and subsurface soils to site workers. Upon verification that the action limit was achieved and proof of deed certification submitted to TCEQ, the “no further action” recommendation was approved by the TCEQ for the Loading Rack Area and Weathered Tank Bottom Storage Area.*

### References:

- Final RCRA Facility Investigation (RFI) -Soils Investigation Report (Seven WMUs), dated June 1999;
- Corrective Measures Study (CMS) for Nine SWMUs in the TCEQ Corrective Action Program, April 2000;
- Supplemental RFI Soil Sampling and Analytical Results - Priority Groups 5 and 6 (Tanks 811 and 332), dated August 2000;
- Final Report for RCRA Facility Investigation at Four SWMUs, dated 10-2-1995;
- Baseline Risk Assessment (BLRA) for Nine SWMUs in the TCEQ RCRA Corrective Action Program, dated April 2000;
- Response to 10-26-2001 Technical Comments on RFI, BLRA and CMS, dated 02-22-2002.
- Global Approach Work Plan for Corrective Action dated May 1997;
- RCRA Hazardous Waste Permit and Compliance Plan dated 07-29-2002;
- Semiannual Groundwater Report, dated 01-20-2004;
- Updated RCRA Facility Investigation Report, dated 04-30-2003;
- Updated Baseline Risk Assessment Report, dated 07-11-2003;
- Updated Corrective Measures Study, dated 08-21-2003
- Closure Report and Proof of Deed Recordation - Risk Reduction Standard No. 2 for Loading Rack Area, dated 07-08-2003;
- Closure Report and Proof of Deed Recordation - Risk Reduction Standard No. 2 for Weathered Tank Bottom Storage Area, dated 02-06-2002;

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

- 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):*The RCRA regulated units and SWMUs are located within the Crowns facility boundary, and are a minimum of 1000 feet from the facility boundary. Groundwater investigation and semiannual groundwater monitoring reports indicated that the plumes are stable and shrinking at the RCRA-regulated unit Ponds WMA and the five Areas of Concern, consequently, there is no apparent potential for off-site impacts. There are no drinking water wells within these areas of where releases occurred and there are deed restrictions. Affected soils are capped or removed via excavation. These areas are fenced in and workers are restricted from working in affected areas. In place controls and deed restriction prevent workers exposure to surface and subsurface soils References are listed under Question No. 2 of this YE determination.*

<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.”

\_\_\_\_\_ 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): \_\_\_\_\_  
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<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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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI 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):

- YI - 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 Crown Central Petroleum Corporation Facility, ID # TK0004091200, located at Pasadena, Harris County, Texas 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) Maureen Hatfield Date: April 29, 2004  
(print) Maureen Hatfield  
(title) Project Manager

Supervisor (signature) Donald Boothby Date: April 29, 2004  
(print) Donald Boothby  
(title) Supervisor  
Texas Commission on Environmental Quality

Locations where References may be found:  
TCEQ Central Records, Austin, Texas

Contact telephone and e-mail numbers  
  
Project Manager listed above  
(512) 239-2343  
corr.icl@tceq.state.tx.us

**Final Note:** The purpose of the Human Exposures EI is to qualitatively screen exposures based on current land and groundwater use. A "YI" determination does not constitute a screening tool that ends the corrective action process. The "YI" determination may be changed at any time as new information becomes available.