

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: ConocoPhillips Company - Borger Refinery
Facility Address: P.O. Box 271, Borger, Texas 79008
Facility EPA ID #: TXD980626774

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	<u>X</u>	___	___	petroleum constituents & lead
Air (indoors) ²	___	<u>X</u>	___	_____
Surface Soil (e.g., <2 ft)	<u>X</u>	___	___	petroleum constituents & lead
Surface Water	<u>X</u>	___	___	SVOCs & lead
Sediment	<u>X</u>	___	___	SVOCs & lead
Subsurf. Soil (e.g., >2 ft)	<u>X</u>	___	___	petroleum constituents & lead
Air (outdoors)	___	<u>X</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):

Key contaminants at this site result from petroleum refining, including a large number of non-chlorinated hydrocarbons and lead (from previous leaded gasoline production). Releases are from spills, leaks, dumping, landfills, and impoundments. Relevant site data is to be found in the May 2000 Phase I/II RFI Report and the February 2004 Step 2 Facility Operations Area (FOA) Application. TCEQ has verified that the facility has demonstrated and meets the Step 1 Qualifying Criteria requirements for establishing a Facility Operations Area (FOA), (30 Texas Administrative Code 350); the site is currently operating, with site access restrictions and worker safety and health protocols in place to limit exposure to contaminated media. The facility maintains access restrictions with perimeter fencing, controlled access at gates and a 24-hour security and surveillance system. Demonstrated worker safety and health protocols are equivalent to OSHA standards, and the facility has a pollution prevention program in place. Relevant information supporting the Step 1 Qualifying Criteria demonstration is found in the May 2002 Compliance Plan Major Amendment Application and Information to Support Facility Operations Area (FOA) Qualifying Criteria, dated October 29, 2002. This information was approved by the TCEQ in a letter dated October 29, 2002.

Groundwater and Surface Water: Groundwater onsite is contaminated primarily with a large number of petroleum constituents and lead. Several light non-aqueous phase liquids (LNAPLs) plumes also exist. The following primary contaminants exceed Protective Concentration Limits (PCLs) in groundwater: benzene at max. level 93 mg/l (PCL= 0.005mg/l), toluene at max level 170 mg/l (PCL=1 mg/l), ethyl benzene at max. level 6.6 mg/l (PCL=0.7 mg/l), lead at max level 0.72 (PCL=0.0015 mg/l).

Groundwater flows to surface at several locations across the site due to local topography and geology. Investigations have shown that no groundwater plumes extend offsite. Surface water is not suspected to exceed MCLs offsite as indicated by sampling results documented in the May 2000 Phase I/II RFI Report and the February 2004 Step 2 Facility Operations Area (FOA) Application. Effluent is required to remain within TPDES permit limits. Because of the controls in place, exposure to contaminated groundwater is insignificant.

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Surface Soil, Subsurface Soil, and Sediment: Onsite soils are contaminated with a set of constituents similar to those in groundwater. Primary exceedences of Tier 1 industrial Protective Concentration Limits (PCLs) include: benzene at 2100 mg/kg [PCL= 0.026 mg/kg], xylene at 2,000 mg/kg [PCL= 71 mg/kg], lead (Pb) at 5900 mg/kg (max.) [PCL=3 mg/kg]. Offsite soils and sediments are not contaminated above residential PCLs; sediment sampling in downstream areas support this conclusion.

Indoor and Outdoor Air: Industrial air monitoring compliant with OSHA standards in process areas is in place on-site. Because of the controls in place at the facility, exposure to air off-site is not expected to exceed residential air standards.

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.

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	Trespassers	Recreation	Food ³
Groundwater	_N_	_Yes	_N_	_Yes			_N_
Air (indoors)	_na	_na	_na				
Soil (surface, e.g., <2 ft)	_N_	_Yes	_N_	Yes	_N_	_N_	_N_
Surface Water	_N_	_Yes		Yes	_N_	_N_	_N_
Sediment	_N_	_Yes		Yes	_N_	_N_	_N_
Soil (subsurface e.g., >2 ft)				_Yes			_N_
Air (outdoors)	_na	_na	_na	na	_na		

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).

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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):

Residents, Day-Care, Trespassers, Recreation, and Food: The media contamination above protective standards is limited to locations onsite. These exposure pathways (i.e., resident, day-care, trespassers, recreation, and food) do not exist on-site because of security measures and use restrictions in place on the facility.

Workers: Site workers may be exposed to contaminated site soils. Further, workers who perform site environmental sampling may be exposed to groundwater, surface water, and sediment contamination.

Construction: Construction workers may be exposed to any or all of the contaminated media during site construction operations such as excavation.

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

- 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.”

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- _____ 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):

Workers and Construction: These exposure pathways should not result in unacceptable (above OSHA standards) exposures because worker health and safety standards, including Personal Protective Equipment (PPE) requirements, are in force on the facility.

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.

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):

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 **ConocoPhillips Borger Refinery** facility, EPA ID # **TXD980626774**, located at **Borger, 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) _____ Date: August 3, 2004
(print) Eleanor Wehner
(title) Project Manager
Texas Commission on Environmental Quality

And (print) Chuck Hedrickson
(title) Hydrogeologist
EPA Region VI

Supervisor (signature) _____ Date: August 3, 2004
(print) Cathy Remmert
(title) Supervisor, Team II
Texas Commission on Environmental Quality

Locations where References may be found:

TCEQ Central Records, Austin, Texas _____

Contact telephone and e-mail numbers

TCEQ Project Manager listed above
(512) 239-2343
corract@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 "YE" determination does not constitute a screening tool that ends the corrective action process. The "YE" determination may be changed at any time as new information becomes available.