DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

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

Current Human Exposures Under Control

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REMEDIATION DIVISION
Corrective Action Section

Facility Name: Texaco Refining and Marketing Inc.
Facility Address: 315 Grand Street, Amarillo, Texas 79104
Facility EPA ID #: TXD007378995

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?

   X 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).

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)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			See Compliance Plan Groundwater Monitoring Reports
Air (indoors)[2]		X		No impacts to indoor air are known to exist
Surface Soil (e.g., <2 ft)		X		Known impacts to surface soil remediated - see CMS
Surface Water		X		No surface water bodies exist at site
Sediment		X		No surface water sediment exists at site
Subsurf. Soil (e.g., >2 ft)	X			See RFI, Stabilization Reports and CMS
Air (outdoors)		X		No impacts to outdoor air are known to exist

____ 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): As described in the facility CMS, the facility is planned to be closed according to the Texas Risk Reduction Standard (RRS) No. 3 for groundwater and No. 2 for soil. Site specific cleanup objectives for groundwater are proposed in the CMS. For the purpose of completing this checklist, the published RRS#2 cleanup levels for soil and groundwater are used to evaluate the presence of constituents above an appropriate level. Benzene, toluene and ethylbenzene are the constituents which have been consistently detected in groundwater at the facility above RRS#2. During the most recent monitoring event for which data for all of these constituents is available (July 1999), the highest concentrations of these constituents were detected in well MW-125 and were as follows: benzene at 13.3 mg/L, toluene at 11.4 mg/L and ethylbenzene at 0.806 mg/L. The groundwater monitoring results are more fully described in the semiannual Groundwater Monitoring Reports which Texaco submits to the TNRCC according to the facility Compliance Plan. Benzene, toluene, ethylbenzene, xylenes, and total volatile hydrocarbons (TVHC) are the constituents which have been detected in soil at concentrations above RRS#2 and at which remediation has not been completed. The highest concentrations of these constituents have been detected as follows: benzene at 150 mg/kg, toluene at 930 mg/kg, ethylbenzene at 410 mg/kg, xylenes at 1030 mg/kg, and TVHC at 4150 mg/kg, all at the Tank 47 mixer flange. Remediation of these impacts is ongoing via soil vapor extraction, so the actual concentrations are expected to be lower. Other constituents which have been detected at concentrations above the RRS#2 at the facility in the past have been remediated and are no longer present at the site. Soil assessment results for the facility have been described in detail in the RFI Summary Report and Stabilization Reports submitted to the TNRCC during October 1997, September 1998 and June 1999 and are summarized in the facility CMS.

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	N	N	N			N
Air (indoors)	—	—	—				
Soil (surface, e.g., <2 ft)	—	—	—	—	—	—	—
Surface Water	—	—			—	—	—
Sediment	—	—			—	—	—
Soil (subsurface e.g., >2 ft)				N			N
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): Subsurface soil and groundwater impacts remediation are ongoing via soil vapor extraction and groundwater pumping and treatment. During the remediation process, access to the site is restricted and personnel conducting remediation activities which could result in exposure to contaminated media (e.g. groundwater sampling or utilities excavation) follow measures to minimize contaminant exposure.

[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)?

_____ 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):_____

[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):_____

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 **TEXACO AMARILLO PLANT** facility, EPA ID # **TXD007378995,** located at **315 GRAND STREET, AMARILLO, TEXAS 79014** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

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____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.
(1) Incomplete information
(2) Reports in house, yet to be reviewed
(3) Unfamiliar site

For "NO" or "IN" determination, expected date of "YE" determination _____

Completed by (signature) M.M. Padaki Date 01/31/2000
MURALI M. PADAKI
CORRECTIVE ACTION SPECIALIST

Supervisor (signature) Cathy Remmert Date 2/2/00
(print) CATHY REMMERT
(title) SUPERVISOR
(EPA Region or State) TEXAS

Locations where References may be found:

If "YE" Code is assigned then attach a copy of database, highlight the reports which support "YE"determination.

_____
_____
_____
_____
_____

Contact telephone and e-mail numbers

(name) MURALI PADAKI
(phone #) (512) 239-2356
(e-mail) MPADAKI@TNRCC.STATE.TX.US

YE based on review of checklist completed by company + documents listed on pertinent.