SWR# 30043

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: Borger Rubber Chemicals Complex
Facility Address: FM 1551 & SH 136, Borger, Texas
Facility EPA ID #: TXD 091263558

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"** 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	APAR Section
Groundwater	X			VOCs Metals SVOCs	6
Air (indoors) [2]		X			
Surface Soil (e.g., <2 ft)	X			VOCs, Metals, SVOCs	5
Surface Water	X			VOCs, Metals, SVOCs	7
Sediment	X			VOCs, Metals, SVOCs	7
Subsurf. Soil (e.g., >2 ft)	X			VOCs, Metals, SVOCs	5
Air (outdoors)		X			8

_____ 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):

ConocoPhillips (formerly Phillips Petroleum Company) previously operated the Borger Rubber Chemicals Complex (BRCC) until the mid 1980's when the facility was closed and the majority of the facility demolished. A number of waste units were utilized during the operation of the BRCC and some of these were identified as Solid Waste Management Units (SWMUs). One waste unit, the Waste Chemical Pond (WCP) was permitted to handle hazardous waste. The WCP was closed and is currently in Detection Monitoring in accordance with a Post Closure Care Permit. The Post Closure Care Permit incorporates a Compliance Plan that requires an RCRA Facility Investigation (RFI) to be completed at the BRCC for the identified SWMUs. Two phases of the RFI have been completed at the BRCC and the investigations have defined the extent of APs in each of the different media. The first phase of the RFI was conducted in the mid 1990s and provided an initial assessment of the extent of impacts resulting from the different SWMUs. The second phase of the RFI was completed in accordance with the Texas Risk Reduction Program (TRRP) in the form of an Affected Property Assessment Report (APAR). The APAR requires that each of the media of concern be addressed by defining the extent of the affected media based on Protective Concentration Limits (PCLs). PCLs are risk-based "levels" that were used to define the extent of affected media. The APAR was completed in May 2001 with Addenda submitted in May 2002, August 2003, and July 2004.

The site information and the investigation results presented in the APAR documents provide the basis for the conclusions presented herein. As noted, the BRCC is a closed and demolished facility that is fenced and has security during daylight hours.

During the second phase of the RFI, the SWMUs present at the site were divided into two Affected Properties (APs) based on the types of waste managed in the SWMUs. The two APs are as follows:

- Furfural Area – located on the west side of the BRCC north of the old Butadiene Plant;
- Rubber Burial Site/Consolidated Ponds Area – located on the east side of the BRCC

north of the old Copolymer Plant.

The two APs were defined based on the close proximity of many of the SWMUs and the similar wastes that were managed in the SWMUs. The locations and the similar wastes make the grouping of the SWMUs the most practical approach to conducting an investigation into the nature and extent of the impacts at the BRCC. The data collected during the investigations indicate that the identified media have been impacted. The results are summarized below.

Groundwater: As discussed in Section 6 of the APAR, there are contaminants that have been detected at concentrations in the groundwater in each of the APs at the BRCC that exceed the human health PCLs. The specific contaminants that exceed human health PCLs are listed on Table 2-1 for the FA and Table 2-2 for the CPA/RBSs. As required in the APAR, the distribution of each of the contaminants in the groundwater beneath the affected properties is displayed on the maps included in Section 6.

Indoor Air: The BRCC has been closed and most of the buildings onsite have been demolished. The remaining buildings onsite are not located over a contaminated groundwater plume. Based on these site conditions, indoor air is not impacted.

Surface Soil (<2 ft): As discussed in Section 5 of the APAR, there are contaminants that have been detected at concentrations in the surface soils in each of the APs at the BRCC that exceed Human Health PCLs. The specific contaminants that exceed Human Health PCLs are listed on Tables 2-1 and 2-2. The distribution of each of the contaminants in surface soils beneath the affected properties is shown on the maps included in Section 5.

Surface Water and Sediment: As discussed in Section 7 of the APAR, there are contaminants that have been detected at concentrations in the surface water and sediments in each of the APs at the BRCC that exceed human health PCLs. The specific contaminants that exceed Human Health PCLs are listed on Tables 2-1 and 2-2. The distribution of each of the contaminants in surface water and sediment beneath the APs is shown on the maps included in Section 7.

Subsurface Soil (>2 ft): As discussed in Section 5 of the APAR, there are contaminants that have been detected at concentrations in the subsurface soils in each of the APs at the BRCC that exceed the Human Health PCLs. The specific contaminants that exceed Human Health PCLs in the subsurface soils are listed on Tables 2-1 and 2-2. The distribution of each of the contaminants in subsurface soil is shown on the maps in Section 5 of the APAR.

Outdoor Air: As discussed in Section 8 of the APAR, field screening of the outdoor air quality during the investigation did not detect concentrations of contaminants.

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) suggests 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.

Table 2-1

Furfural Area PCLs

Chemical of Concern	Media	Maximum or Representative COC Concentration (specify unit of measurement)	Critical PCL (specify unit of measurement)	Human Health (res or C/I) or Ecological	Tier
Arsenic	Surface Soil	16 mg/kg M	5.9 mg/kg	Background	N/A
Furfural	Subsurface Soil	3900 mg/kg M	0.761 mg/kg	C/I	2-30 ac.
Arsenic	Subsurface Soil	13 mg/kg R	5.9 mg/kg	Background	N/A
Benzene	Subsurface Soil	29 mg/kg M	7.906 mg/kg	C/I	2-30 ac.
Methylene Chloride	Subsurface Soil	1.3 mg/kg M	0.0065 mg/kg	C/I	1-30 ac.
Antimony	Subsurface Soil	11 mg/kg M	2.7 mg/kg	C/I	1-30 ac.
Cadmium	Subsurface Soil	1.2 mg/kg M	0.75 mg/kg	C/I	1-30 ac.
Xylene	Subsurface Soil	120 E mg/kg M	61.261 mg/kg	C/I	2-30 ac.
Toluene	Subsurface Soil	100 E mg/kg M	4.105 mg/kg	C/I	2-30 ac.
Styrene	Subsurface Soil	25 mg/kg M	2.254 mg/kg	C/I	2-30 ac.
Ethylbenzene	Subsurface Soil	220 E mg/kg M	3.815 mg/kg	C/I	2-30 ac.
Barium	Surface Water	1.8 mg/l M	2.0 mg/l	C/I	N/A
Manganese	Surface Water	1.1 mg/l M	10 mg/l	C/I	N/A
Benzene	Surface Water	1.7 mg/l M	0.005 mg/l	C/I	N/A
Aluminum	Groundwater	95 mg/l M	73 mg/kg	C/I	N/A
Antimony	Groundwater	0.024 mg/l M	0.006 mg/l	C/I	N/A
Arsenic	Groundwater	0.44 mg/ M	0.01 mg/l	C/I	N/A
Barium	Groundwater	5.6 mg/l M	2.0 mg/l	C/I	N/A
Beryllium	Groundwater	0.006 mg/l M	0.004 mg/l	C/I	N/A
Cadmium	Groundwater	0.008 mg/l M	0.005 mg/l	C/I	N/A
Chromium	Groundwater	0.13 mg/l M	0.1 mg/l	C/l	N/A
Lead	Groundwater	0.075 mg/l M	0.015 mg/l	C/I	N/A
Vanadium	Groundwater	0.40 mg/l M	0.51 mg/l	C/I	N/A
Benzene	Groundwater	13.0 mg/l M	0.005 mg/l	C/I	N/A
Ethylbenzene	Groundwater	4.6 mg/l M	0.7 mg/l	C/I	N/A
Toluene	Groundwater	16.0 mg/l M	1.0 mg/l	C/I	N/A
Styrene	Groundwater	4.6 mg/l M	0.1 mg/l	C/I	N/A

Table 2-1

Consolidated Ponds Area/Rubber Burial Site Area PCLs

Chemical of Concern	Media	Maximum or Representative COC Concentration (specify unit of measurement)	Critical PCL (specify unit of measurement)	Human Health (res or C/I) or Ecological	Tier
Benzo(a)pyrene	Surface Soil	11 mg/kg M	6.791 mg/kg	C/I	2
Barium	Surface Soil	2200 J mg/kg M	693 mg/kg	Background	NA
Ethylbenzene	Subsurface Soil	26,000 mg/kg M	6.867 mg/kg	C/I	2
N-Nitrosodiphenylamine	Subsurface Soil	180 mg/kg M	5.732 mg/kg	C/I	2
Arsenic	Subsurface Soil	36 mg/kg M	29.696 mg/kg	C/I	2
Nickel	Subsurface Soil	26,000 mg/kg M	2244.239 mg/kg	C/I	2
Barium	Subsurface Soil	5600 mg/kg M	1655.493 mg/kg	C/I	2
Antimony	Subsurface Soil	16 mg/kg M	3.037 mg/kg	C/I	2
Styrene	Subsurface Soil	4,900 mg/kg M	2.929 mg/kg	C/I	2
Toluene	Subsurface Soil	5000 mg/kg M	7.389 mg/kg	C/I	2
Methylene Chloride	Subsurface Soil	1.4 mg/kg M	0.008 mg/kg	C/I	2
Manganese	Surface Water	1.1 mg/l M	10 mg/l	C/I	2
Antimony	Groundwater	0.008 mg/l M	0.006 mg/l	C/I	1
Arsenic	Groundwater	0.069 mg/l M	0.01 mg/l	C/I	1
Cadmium	Groundwater	0.026 mg/l M	0.005 mg/l	C/I	1
Lead	Groundwater	0.12 mg/l M	0.015 mg/l	C/I	1
1,2 Dichloroethene	Groundwater	0.009 mg/l M	0.005 mg/l	C/I	1
Benzene	Groundwater	0.005 mg/l M	0.005 mg/l	C/I	1
Vinyl Chloride	Groundwater	1.5 mg/l M	0.002 mg/l	C/I	1
Trichloroethene	Groundwater	0.015 mg/l M	0.005 mg/l	C/I	1
Bis(2 chloroethyl)ether	Groundwater	0.032 mg/l M	0.0019 mg/l	C/I	1

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	NO	YES	NO	NO			NO
Soil (surface, e.g., <2 ft)	NO	YES	NO	NO	NO	NO	NO
Surface Water	NO	YES			NO	NO	NO
Sediment	NO	YES			NO	NO	NO
Soil (subsurface e.g., >2 ft)				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 and Reference(s):

As discussed in detail in the APAR, the BRCC is a closed facility with limited access fencing and daylight security. These site conditions coupled with the delineation of affected media indicate that there are no completed pathways between "contamination" and human receptors, other than onsite workers that can be reasonably expected under current conditions. Each of the Potential Human Receptors is summarized below.

Residents: There are no residents onsite and there are no known affected media that extend offsite. No reasonable exposures are expected from any of the media on residents.

Workers: The workers onsite include environmental personnel (company employees and contractors), security, and occasional oil field, electrical and water utility workers, and pipeline workers (i.e., truck drivers and pumpers). Each of these workers are informed of the site conditions and, where needed, provided with training so that they are aware of the potential for exposure to contaminants present at the site. Based on this site control and the training, it is unlikely that exposures would be expected from any media to on site workers. ConocoPhillips, however, has answered "YES" to these questions because there is a small possibility that a completed pathway is present.

Day-Care: There are no day care facilities on site. The extent of the affected media has been defined and do not extend off site. No reasonable exposures are expected from any of the media on day care facilities.

Construction: There are no current construction activities ongoing at the site nor are there any planned construction activities. No reasonable exposures are expected from any of the media on construction workers. Should construction activities be required in the future, the workers will be trained based on the location of the activities.

Trespassers: The BRCC is fenced with a 6-8 foot security fence in the south portion of the facility and a four strand barbed wire fence on the north portion of the facility. The front gate is manned 12 hours each day during daylight hours. The front gate is locked when there is no security. The fence has several other locked gates so that only the workers identified have access. The fence has "No Trespassing" signs around the perimeter to alert against trespassing. There should not be trespassers on site. No reasonable exposures are expected from any of the media on trespassers.

Recreation: There are no recreational activities that occur at the BRCC. No reasonable exposures are expected from any of the media on recreational activities.

Food: No reasonable exposures are expected from any of the media on food sources.

[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."

_____ 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):
Question #3 identified possible completed pathways between onsite workers and impacted media of groundwater, surface soil, surface water and sediment, and subsurface soils. Although these pathways are possibly complete, all onsite workers are informed of the impacted media onsite and are trained in measures to be taken to avoid an exposure. This training includes the use of proper personal protective equipment and site monitoring requirements that are appropriate for each area and each media and contaminant. These measures ensure that any potential exposure will not be significant.

Although these pathways will not result in a significant exposure, as summarized in Section 13.1 of the APAR Addendum, the groundwater and the subsurface soil media do exceed PCLs and remedial action will be required. Until this remedial action is taken, the onsite workers will continue to be trained and informed of potential exposures.

[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 Borger Rubber Chemicals Complex facility, EPA ID #TXD091263558, located at FM 1551 and SH 136, 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: July 30, 2004
(print) Gilbert Manning_____
(title) Project Manager, TCEQ_____

Supervisor (signature)_____ Date: July 30, 2004
(print) Donald Boothby_____
(title) Supervisor, Team 1, TCEQ_____

Locations where References may be found:

TCEQ Central Records, Austin, Texas

Contact telephone and e-mail numbers

Project Manager listed above
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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.