

30676

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: Lyondell Worldwide, Inc., Channelview, Plant  
Facility Address: 2502 Sheldon Rd., Channelview, TX 77530  
Facility EPA ID #: TXD083472266

- 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).

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

Page 2

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>Benzene; ethyl benzene</u>
Air (indoors) <sup>2</sup>	___	<u>X</u>	___	___
Surface Soil (e.g., <2 ft)	___	<u>X</u>	___	___
Surface Water	___	<u>X</u>	___	___
Sediment	___	<u>X</u>	___	___
Subsurf. Soil (e.g., >2 ft)	<u>X</u>	___	___	___
Air (outdoors)	___	<u>X</u>	___	<u>Benzene; ethyl benzene</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): Attached quarterly site-wide monitoring report.

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

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.

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?  
 No, there are no completed human exposure pathways.  
Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)

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

— 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).

Yes 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): Site workers could be exposed to affected soils.  
Engineering controls and procedures are in place to insure that site workers are not exposed.

<sup>3</sup> 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"<sup>4</sup> (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1)







Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)  
Page 6

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  Lyondell  facility,  EPA ID #TXD 083472266 , located at  Channelview  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. "IN" is based on:  
(1) Incomplete information submitted by facility  
(2) Reports in house, yet to be reviewed  
(3) Unfamiliar with site

For "NO" or "IN" determinations, estimate a date that "YE" may be achieved:  5/1/03

Completed by  [Signature]  Date  25 June 01   
 TNRCC   
 Kirk Coulter   
Supervisor  [Signature]  Date  29 June 01   
 Phyllis Primrose   
 TNRCC

Locations where References may be found:

*If "YE" is assigned, attach a copy of this facility's database printout. Highlight the reports which support the "YE" determination.*

\_\_\_\_\_

Contact telephone and e-mail numbers (if different from above)

(name)  NA   
(phone #) \_\_\_\_\_  
(e-mail) \_\_\_\_\_

**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.**

*info K-1  
7/5/01*

Document List Grouped by Company / Facility Name

HUNTSMAN PETROCHEMICAL CORP

SWR/Fac ID 31907

Facility I

<u>Doc#</u>	<u>Date Rcd</u>	<u>Dated</u>	<u>Title</u>	<u>Type</u>	<u>Description</u>	<u>Due Date</u>	<u>Finished Date</u>
11920	2/8/01	1/10/01	SECOND SEMI-ANNUAL 2000 GW COR. ACTION MONITORING RPT	REF'D IN-RPT	INV/ASSESS	6/8/01	4/18/01
13203	6/14/01	6/5/01	REQUEST FOR INFORMATION TELECON ON 5/29/01	LTR	RRS2	10/12/01	

Number of Documents = 24

LUBBOCK POWER & LIGHT (HOLLY PLANT)

SWR/Fac ID 37374

Facility I

<u>Doc#</u>	<u>Date Rcd</u>	<u>Dated</u>	<u>Title</u>	<u>Type</u>	<u>Description</u>	<u>Due Date</u>	<u>Finished Date</u>
18	9/25/1998	9/16/1998	DISCHARGE REPORT FORM	LTR	NRN		1/11/1999
551	10/23/1998	10/20/1998	DISCHARGE REPORT FORM	LTR	NRN		1/11/1999
1805	11/23/1998	11/17/1998	DISCHARGE REPORT FORM	LTR	NRN		1/11/1999
2504	12/30/1998	12/18/1998	DISCHARGE REPORT FORM	LTR	NRN		1/11/1999
3358	3/2/1999	2/19/1999	DISCHARGE REPORT FORM--JANUARY 1999 REPORTING PERIOD	RPT	NRN		3/4/1999
3645	4/1/1999	3/19/1999	DISCHARGE REPORT FORM--FEBRUARY 1999	RPT	NRN		4/26/1999

Number of Documents = 0

LYONDELL CHEMICAL CO (FMR ARCO CHEMICAL CO)

SWR/Fac ID 30676

Facility I

<u>Doc#</u>	<u>Date Rcd</u>	<u>Dated</u>	<u>Title</u>	<u>Type</u>	<u>Description</u>	<u>Due Date</u>	<u>Finished Date</u>
2369	4/17/1997	4/10/1997	rfi work plan - main plant "site wide"	RPT	INV/ASSESS		
2370	4/22/1997	4/18/1997	blra / cms - posm 1, eb, & flare wmas (rpt dated June 1995)	RPT	BLRA COMBO		
2371	4/22/1997	4/18/1997	rfi report - posm 1, eb, & flare wmas (rpt dated June 1995)	RPT	INV/ASSESS		
12387	3/26/01	3/21/01	CHANNELVIEW GW SAMPLING	WP	NRN		4/17/01
12317	3/20/01	3/2/01	QRTL. GROUND WATER MONITORING & REMED. FOURTH (4TH) QRTR.	RPT	INV/ASSESS	7/18/01	
13222	6/18/01	6/13/01	GW MONITORING PLAN 3RD QUARTER 2001	WP	INV/ASSESS	9/16/01	

*Completed*

Number of Documents = 0

METROPOLITAN TRANSIT AUTHORITY

SWR/Fac ID 71247

Facility I

<u>Doc#</u>	<u>Date Rcd</u>	<u>Dated</u>	<u>Title</u>	<u>Type</u>	<u>Description</u>	<u>Due Date</u>	<u>Finished Date</u>
3634	3/26/1999	3/25/1999	SURFACE WATER SAMPLING SUMMARY - MAPS	LTR	NRN		4/26/1999

30676

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action  
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Lyondell Worldwide, Inc., Channelview Plant  
Facility Address: 2502 Sheldon Rd., Channelview, TX 77530  
Facility EPA ID #: TXD083472266

- 1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, 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 #8 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 "Migration of Contaminated Groundwater Under Control" EI**

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "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 "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

**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).







**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

5. Is the discharge of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the maximum concentration<sup>3</sup> of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

\_\_\_\_\_ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration<sup>3</sup> of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

\_\_\_\_\_ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration<sup>3</sup> of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations<sup>3</sup> greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

\_\_\_\_\_ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<sup>3</sup> As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the discharge of "contaminated" groundwater into surface water be shown to be "currently acceptable" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented<sup>4</sup>)?

\_\_\_\_\_ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,<sup>5</sup> appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

\_\_\_\_\_ If no - (the discharge of "contaminated" groundwater can not be shown to be "currently acceptable") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

\_\_\_\_\_ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<sup>4</sup> Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

<sup>5</sup> The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.



8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

YE YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Lyondell Channelview facility, EPA ID # TXD083472266, located at Channelview, TX. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

       NO - Unacceptable migration of contaminated groundwater is observed or expected.

       IN - More information is needed to make a determination.

Completed by (signature) Ted Davis Date 12-21-99  
(print) Ted Davis  
(title) Project Manager

Supervisor (signature) R Sloan Date 12-21-99  
(print) Richard Sloan  
(title) Remediation Manager  
(EPA Region or State) EPA Region 6

AFB

Locations where References may be found:

2502 Sheldon Rd., Channelview, TX 77530

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contact telephone and e-mail numbers

(name) Richard Sloan  
(phone #) 281/862-5575  
(e-mail) Richard.Sloan@lyondell.com

Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)

Page 8

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

**YE** - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Lyondell facility, EPA ID #TXD083472266, located at Channelview. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

**NO** - Unacceptable migration of contaminated groundwater is observed or expected.

**IN** - More information is needed to make a determination. "IN" is based on:

- (1) Incomplete information submitted by facility
- (2) Reports in house, yet to be reviewed
- (3) Unfamiliar with site

For "NO" or "IN" determinations, estimate a date that "YE" may be achieved: 5/01/03

Completed by

Kirk Coulter  
TNRCC  
Kirk Coulter

Date 25 June 01

WFB Supervisor

Phyllis Primrose  
TNRCC  
Phyllis Primrose  
TNRCC

Date 29 June 01

Locations where References may be found:

*If "YE" is assigned, attach a copy of this facility's database printout. Highlight the reports which support the "YE" determination.*

Contact telephone and e-mail numbers (if different from above)

(name) NA

(phone #) \_\_\_\_\_

(e-mail) \_\_\_\_\_