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

Current Human Exposures Under Control

Facility Name: Chalmette Refining, LLC/ExxonMobil
Facility Address: 500 W. St. Bernard Highway, Chalmette, LA 70043-4821
Facility EPA ID #: LAD 008179707

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).

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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)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			See Appendix A
Air (indoors) [2]		X		No administration buildings are located over areas of soil/groundwater impacts. See Appendix A
Surface Soil (e.g., <2 ft)	X			See Appendix A
Surface Water		X		No impacts to surface water are suspected based on investigations conducted to date. See Appendix A
Sediment		X		No impacts to sediments are suspected based on investigations conducted to date. See Appendix A
Subsurf. Soil (e.g., >2ft)	X			See Appendix A
Air (outdoors)		X		See Appendix A

___ 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): A RCRA Facility Investigation (RFI) was conducted under a Consent Agreement with the USEPA Region VI (Docket No. VI-003 (h) 95-H) to identify and investigate releases of hazardous waste or hazardous constituents at the refinery and to ensure that corrective measures or other response measure(s) are designed and implemented to protect human health and the environment. USEPA responded in a letter dated March 4, 2003 requesting implementation of a plan to determine the applicability of Monitored Natural Attenuation as a potential groundwater remedial alternative. A Sampling and Analysis Plan for MNA activities was submitted to USEPA on July 1, 2003. ExxonMobil received the review comments on the Plan from the USEPA dated October 29, 2003, and submitted the revised Sampling and Analysis Plan in December 2003.

The RFI concentrated on near-surface groundwater quality beneath the site, and results indicated that the impacted groundwater at the facility is undergoing active natural attenuation. The key contaminants in each affected medium are the petroleum hydrocarbons associated with the petroleum refining industry.

Appendix A presents conclusions of an assessment of human exposures for environmental media, based upon RFI results and other relevant site-specific information. Figure 1 of this document is the site location map. Figure 2 illustrates the current monitor well network, and Figure 2a is a detail of the existing monitor well network. Figure 3 shows the proposed monitor well network.

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.

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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)

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

__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): Groundwater. Workers could be exposed to shallow contaminated groundwater during excavation activities; however, they are protected through OSHA health and safety practices, the facility's work permit system, and an excavation program, which is mandatory for workers and contractors. Workers are required to wear proper personal protective equipment and use personal health and safety monitoring, where warranted. Exposures to contaminated groundwater are considered to be insignificant because of these in-place work practices. A groundwater to surface water pathway directly to the Mississippi River has not been determined, but is considered to be unlikely since net groundwater flow direction along the River is generally away from the Mississippi River. The pathway will be further evaluated during the implementation of the revised Sampling and Analysis Plan submitted in December 2003. Contamination in the upper aquifers is monitored by a site-wide monitoring well system. Any shallow discharge through ditches or canals to the Mississippi River is controlled through permitted outfalls, and effluent is required to remain within LPDES permit limits; the exposure is therefore

considered to be insignificant. Because of the controls in place, exposure to contaminated groundwater is considered to be insignificant.

Surficial Soils. Potential human exposure pathways to contaminated surface soils through dermal contact and incidental ingestion by trespassers, onsite workers, and construction/utility workers is considered to be insignificant due to the following controls that are currently in place at the Chalmette facility: 1) institutional controls that restrict access to the site, such as a perimeter fence with guarded gates, 24-hour patrolling of the property, and surveillance by video cameras; any exposures to trespassers are therefore considered to be insignificant, 2) exposures to chemicals in the surface soils is controlled by the on-site work permit process, the excavation program, and other OSHA site safety programs that require the use of personal protective equipment and personal monitoring during work activities. Because of these work practices that are in place at Chalmette Refining, exposures are considered to be insignificant.

Appendix A presents conclusions of an assessment of human exposures for environmental media, based upon RFI results and other relevant site-specific information.

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

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

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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): Appendix A presents conclusions of an assessment of human exposures for environmental media, based upon RFI results and other relevant site-specific information.

[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

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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):

__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 Chalmette Refining, LLC facility, EPA ID # LAD 008179707, located at Chalmette, Louisiana 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 3/9/04
(print) Jeffrey Jones
(title) Geologist III, LDEQ, Environmental Technology Division

Supervisor (signature) _____ Date 3/9/04
(print) Narendra Dave
(title) Geological Manager, LDEQ, Environmental Technology Division
(EPA Region or State) Louisiana

Larry Brumley for 6PD-N 4/2/04

Locations where References may be found:

LDEQ Hazardous Waste Files
LDEQ Solid Waste Files
LDEQ Ground Water Files
On-site facility records and correspondence files

Contact telephone and e-mail numbers

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(e-mail) jeffrey.jones@la.gov

(name) _____
(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.

APPENDIX A
HUMAN EXPOSURE PATHWAY ANALYSIS

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Available upon request