

US EPA ARCHIVE DOCUMENT

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**Interim Final 2/5/99****RCRA Corrective Action****Environmental Indicator (EI) RCRIS code (CA 725)****Current Human Exposures Under Control**Facility Name: **Bigard Oil**Facility Address: **RR 6 Box 330, Newton, Illinois 62448**Facility EPA #: **ILD 009 033 341**

- 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.

*Based on sampling and analysis of soils, water and sediments at the Bigard Oil site April through June of 2005.

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 EIs 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" 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)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater		X		Little to no surface contamination for any contaminant remains based on 4/19/2005 sampling. Attempts to reach groundwater yielded auger refusal at 20 feet deep, through which is a layer of hard clay.
Air (indoors) ²		X		There are no buildings on site, within or under which volatile compounds were found.
Surface Soil (e.g., <2 ft)	X			Carbon Tetrachloride concentration in the surface soil exceeded Region 9 PRG screening level for industrial worker exposure scenario.
Surface Water		X		Sampling Conducted on 4/19/05 for Metals, Volatile Organics, Semi-Volatile Organics and PCB/Aroclors yielded no detected contaminants.
Sediment		X		Sampling Conducted on 4/19/05 for Metals, Volatile Organics, Semi-Volatile Organics and PCB/Aroclors yielded no detected contaminants.
Subsurface Soil (e.g., >2 ft)		X		No underground tanks, pipes or other waste or product storage media ever existed at the site. The highest concentrations concentrations of contaminants from surface spills are just above industrial human health direct contact levels. The subsurface, based on geoprobe borings is comprised of hard clay. There is no reason to suspect subsurface contamination at levels posing a human health risk.
Air (outdoors)		X		There is no reason to suspect outdoor air risks.

- 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):

Surface soil and subsurface soil concentrations were compared against Region 9 PRG screening criteria targeting routine industrial workers.

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 organic compounds) 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	Resident ¹	Worker	Day ² Care	Constr- uction	Tres- Passer	Recre- ³ ation	Food ⁴
Groundwater							
Air (indoors) ²							
Surface Soil (e.g., <2 ft)	No	Yes	No	Yes	Yes	No	No
Surface Water							
Sediment							
Subsurface Soil (e.g., >2 ft)							
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). N/L = Not Likely

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):

Footnotes:

¹ No Residents live on the site

² No Day Care facilities exist at or near the facility

³ No Recreational Facilities exist near the facility.

⁴ No food products are grown or consumed from this facility

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- 4 Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be "significant" (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):

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.

Maximum concentration of carbon tetrachloride found in the subsurface soil is 0.91ppm. Based on the Region 9 PRG screening criteria, this concentration corresponds to an excess cancer risk of $1.6E^{-06}$ for a routine industrial worker. Although this concentration exceeds the screening criteria, the risk is expected to be insignificant as it lies within the USEPA's acceptable risk range $1E^{-06}$ to $1E^{-04}$.

For construction worker and trespasser, the overall risk is expected to be insignificant, since the duration of exposure for these receptors is considerably lesser than that of routine industrial worker.

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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):

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 **Bigard Oil** facility, EPA ID # **ILD 009 033 341**, located at **RR6 Box 330, Newton, IL 62448**, 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 June 20, 2005
(print) **Brian P. Freeman**
(title) **Sr. Chemist, Corrective Action Project Manager**

Supervisor (signature) _____ Date _____
(print) **George Hamper**
(title) **Chief, ECAB Corrective Action Section**
(EPA Region or State) **US EPA Region 5**

Locations where References may be found: The documents below referencing this Bigard Oil EI determination can be found in the 7th Floor Records Center, 77 W. Jackson, Chicago, IL 60604
Bigard Oil PA/VSI Report, Techlaw, 1998
Bigard Oil IEPA File Review, April 2005
Bigard Oil Sampling Report, IEPA, April 2005
Bigard Oil Analytical Data, US EPA Region 5 CRL, June 2005

Contact telephone and e-mail numbers

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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.