

**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:** Pennzoil Wax Partner Co.  
**Facility Address:** Two Main Street, P.O. Box 415, Rouseville, PA 16344  
**Facility EPA ID #:** PAD 004 329 835

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, GPRRA). 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”**<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	x			see below
Air (indoors) <sup>2</sup>	x			see below
Surface Soil (e.g., <2 ft)	x			see below
Surface Water		x		see below
Sediment	x			see below
Subsurf. Soil (e.g., >2 ft)	x			see below
Air (outdoors)		x		see below

\_\_\_\_\_ 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):**

**Plant 1**

**Groundwater:** Acetone, Benzene, 2-Butanone, Toluene, Bis(2-chloroethyl)ether, Benzo(a)pyrene, Benzo(a)anthracene, Chrysene, Bis(2-ethylhexyl)phthalate, Di-n-octyl-phthalate, Fluoranthene, Benzo(b)fluoranthene, Antimony, Arsenic, Barium, Boron, Total chromium, Lead, and Selenium were detected in groundwater at concentrations above the Nonresidential-used (NR-U) aquifer Statewide Health Standards (SWHSs).

Iron, Manganese, and Aluminum were detected in groundwater above their respective secondary maximum levels (SMCLs) for drinking water.

A dissolved-phase plume of Toluene was discovered downgradient from the former MEK dewaxing plant. All other analytes exceeding the SWHSs were detected throughout the site with no obvious sources.

Benzene, Toluene, and Barium were detected in the deep unconsolidated wells at concentrations above the NR-U SWHSs. Iron and Manganese were detected in the deep unconsolidated wells above their respective SMCLs for drinking water.

<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.

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Monitoring well samples were collected and analyzed to identify the products that are present in separate-phase liquid (SPL) found throughout the site. The products identified are cutting/motor oil, Stoddard solvent, #2 fuel oil, #6 fuel oil, Kerosene, Gasoline, Transmission fluid, and Hydraulic/gear lube oil. The plumes (including SPL and Toluene) range from Non-detect (ND) to 9.74 feet in thickness.

**Air (indoors):** A baseline human health risk assessment was completed on Plant 1. Non-cancer risks were found to exceed 1.0 for selected receptor groups (environmental remediation workers and future land users), exclusively as a result of vapor intrusion pathways into indoor air.

**Surface soil:** Methylene chloride; 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; Benzene; Benzo(a)pyrene; Thallium; and Arsenic were detected in surface soils at concentrations above the NR-U SWHSs. Benzo(a)pyrene and Arsenic exceeded the direct contact (DC) SWHSs. The remainder of the exceedences were for the soil to groundwater SWHSs.

**Surface water:** Monitoring suggests that dissolved-phase constituents may enter the surface water from the groundwater. The Department of Environmental Protection's (DEPs) PENTOXSD model was used to evaluate the significance of the dissolved-phase constituents entering the surface water. There is limited opportunity for dispersion or attenuation due to proximity to Oil Creek and Cherry Run, so maximum concentrations detected in each on-site portion were used to evaluate worst-case scenarios. Three specific tests were run to determine worst-case scenarios from specific plumes: Toluene Plume model, Cherry Run model, and Site-wide model.

The model results showed that the Toluene Plume maximum concentrations, the Cherry Run 95percent upper confident level (UCL) concentrations, and the Site-wide 95 percent UCL concentrations were below the water quality-based effluent limits (WQBELs), and therefore do not pose a threat to water quality.

**Sediment:** Sediment sampling conducted during the site characterization report detected primarily Polycyclic Aromatic Hydrocarbons (PAH's).

**Subsurface soil:** Methylene chloride; 1,3,5-Trimethylbenzene; Benzene; Toluene; Naphthalene; Benzo(a)pyrene; Lead; Thallium; and Arsenic were detected in subsurface soils samples at concentrations above the NR-U SWHSs. Arsenic; Benzo(a)pyrene; and Naphthalene exceeded the DC SWHSs. The remainder of the exceedences were for the soil to groundwater SWHSs.

**Air (outdoors):** Plant 1 was sold to Calumet Lubricants Co., L.P. (Calumet) in February 2000. There is no potential for outdoor air contamination because refinery operations at the site were ceased by Calumet in 2002 and the site is currently undergoing decommissioning and demolition.

\* source: *Site Characterization Report-Former PQS Rouseville Refinery Plant 1 January 8, 2004*  
*Conceptual Site Model Former PQS Rouseville Refinery Plant 1 January 2003*  
(References remain the same throughout the remainder of the document)

**Plant 2**

**Groundwater:** Volatile Organic Compound (VOC) concentrations for 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; Benzene; and MTBE were found to exceed the Nonresidential Non-use (NR-NU) Aquifer Pennsylvania Act 2 Medium Specific Concentration (MSC) standards in several former operational areas. There is also two primary areas where Semi-Volatile Organic Compound (SVOCs) are present above the NR-NU MSCs. The SVOCs that showed exceedences include Benzo(a)anthracene; Benzo(a)pyrene; Benzo(b)fluoranthene; Benzo(k)fluoranthene; Dibenzo(a,h)anthracene; 2-Methylnaphthalene; Benzo(g,h,i,)pyrene; Bis(2-ethylhexyl)phthalate; Pyrene; Chrysene; and Fluorene.

Select monitoring wells were placed to monitor the water quality at the base of the aquifer. These wells

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indicate that 1,3,5-Trimethylbenzene; Benzene; and MTBE exceeded the NR-NU MSCs. The concentrations of dissolved metals, SVOCs, and PAHs however, do not exceed the NR-NU MSCs and are confined to the upper portion of the aquifer.

Fingerprint analysis results indicate that the majority of SPL across the site is a gasoline/#2 fuel oil mixture. Two well SPL samples also contained kerosene as well as the gasoline/#2 fuel oil SPL mixture. One SPL sample showed evidence of a cutting/motor oil mixture along with the gasoline/#2 fuel oil mixture.

**Air (indoors):** The Baseline Human Health Risk Assessment has shown that the vapor pathway is a current complete pathway that appears to pose a potential concern to future human receptors.

**Surface soil:** Analytical results indicated isolated areas with concentrations above the non-residential direct contact (NR-DC) MSCs for 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; Benzene; Benzo(a)pyrene; and select metals (Arsenic, Iron, Thallium, and Lead).

Surface soil concentrations for Benzene; Benzo(g,h,i)perylene; and 1,3,5-Trimethylbenzene above the NR-NU MSCs were also identified at the site.

**Surface water:** Findings on the most recent evaluation of the PENTOXSD model using the maximum concentration of Benzene and certain PAHs from the July 2003 sampling event indicate results below the calculated WQBEL for both the site as a whole and the Rack Area. Therefore, the model indicates that current concentration of contaminants are not effecting surface water.

**Sediment:** Three of 18 sediment samples from Oil Creek contained Benzene and/or 1,2,4-Trimethylbenzene at concentrations above the laboratory Method Detection Limit (MDL). Twelve of the sediment samples contained at least one SVOC above the laboratory MDL or at estimated concentrations below the laboratory MDL.

**Subsurface soil:** Analytical results indicated former operational areas and isolated areas with concentrations above the NR-DC MSC standards for 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; Benzene; and Trichloropropane.

Subsurface soil analytes that exceeded the NR-NU MSCs for 1,3,5-Trimethylbenzene and Benzene were more widespread than the NR-DC exceedences in surface soil. Exceedences were found in six former operational areas. One isolated sample of 1,1,2,2-Tetrachloroethane exceeded the NR-NU MSC.

**Air (outdoors):** There is no potential for outdoor air contamination because Plant 2 has recently undergone decommissioning and demolition.

\* source: *Site Characterization Report-Former Rouseville Refinery -Plant 2 December 19, 2003*  
*Site Characterization Report-Former Rouseville Refinery -Plant 2 March 2003*  
(References remain the same throughout the remainder of the document)

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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- Plant 1**

Potential **Human Receptors** (Under Current Conditions)

<b><u>“Contaminated” Media</u></b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	<u>no</u>	<u>no</u>	<u>no</u>	<u>yes</u>			<u>no</u>
Air (indoors)	<u>no</u>	<u>yes</u>	<u>no</u>				
Soil (surface, e.g., <2 ft)	<u>no</u>	<u>no</u>	<u>no</u>	<u>yes</u>	<u>yes</u>	<u>no</u>	<u>no</u>
<b><u>Surface Water</u></b>							
Sediment	<u>no</u>	<u>no</u>			<u>no</u>	<u>no</u>	<u>no</u>
Soil (subsurface e.g., >2 ft)				<u>yes</u>			<u>no</u>
<b><u>Air (outdoors)</u></b>							

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:** The land is currently zoned for industrial use and is not anticipated to change in the foreseeable future. However, if there were ever plans for construction in any contaminated area, there would be potential direct contact issues for the construction workers.

**Surface soil:** A total of 6 out of 90 samples yielded concentrations that exceed the direct contact non-residential SWHS, so there is a complete exposure pathway.

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**Subsurface soil:** A total of 3 out of 208 samples yielded concentrations that exceed the direct contact non-residential SWHS. If there were ever plans for construction in any contaminated areas, there would be potential direct contact pathways for the workers.

**Air (indoors):** The Baseline Human Health Risk Assessment has shown that the vapor pathway is a current complete pathway that appears to pose a potential concern to future human receptors.

**Summary Exposure Pathway Evaluation Table- Plant 2**

Potential **Human Receptors** (Under Current Conditions)

<b><u>“Contaminated” Media</u></b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	_no_	_no_	_no_	_yes_			_no_
Air (indoors)	_no_	_no_	_no_				
Soil (surface, e.g., <2 ft)	_no_	_no_	_no_	_yes_	_no_	_no_	_no_
Surface Water	_	_			_	_	_
Sediment	_no_	_no_			_no_	_no_	_no_
Soil (subsurface e.g., >2 ft)				_yes_			_no_
<u>Air (outdoors)</u>	_	_	_	_	_		

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.

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

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**Rationale and Reference(s):**

**Groundwater:** The land is currently zoned for industrial use and is not anticipated to change in the foreseeable future. However, if there were ever plans for construction in any contaminated area, there would be potential direct contact issues for the workers.

**Surface soil:** Direct contact exposure pathways exist on the site for workers performing site disturbance activities (e.g., construction, utility repairs).

**Subsurface soil:** Direct contact exposure pathways exist on the site for workers performing site disturbance activities (e.g., construction, utility repairs).

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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) 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):**

**Plant 1**

**Groundwater:** If there were ever plans for construction in any contaminated areas a Health & Safety Plan will be required to identify the extent of the contaminated area and notify any workers of possible exposure. Furthermore, possible additional remediation and/or engineering controls may need to be implemented to decrease potential direct contact issues.

Additionally, the potential future exposure to groundwater at the site does not exist due to the presence of a public water supply, and limited flow availability of water from the near-surface aquifer.

**Surface soil:** The direct contact exposure pathway to surface soil is currently limited because of the fenced and limited access, extensive asphalt and concrete cover, and the much of the facility being under roof.

**Subsurface soil:** The land is currently zoned for industrial use, and is not anticipated to change in the foreseeable future. If there were ever plans for construction in any contaminated areas a Health & Safety Plan will be required to identify extent of the contaminated area and notify any workers of possible exposure as well as possible additional remediation and/or engineering controls implemented to decrease potential direct contact issues.

<sup>4</sup> 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.

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**Air (indoors):** The Baseline Human Health Risk Assessment has shown that the vapor pathway is a current complete pathway that appears to pose a potential concern to future human receptors. This is based on the assumption that the land will be bought and used by a party interested in developing the land and constructing buildings. Currently, the facility is an idle petroleum refinery in the process of being demolished.

Additionally, the potential inhalation pathway is limited. The site has a fence to control unauthorized personnel from entering the site. The site also is covered extensively by asphalt and concrete cover which serves to minimize the likelihood of vapor inhalation. Current site buildings are slab-on-grade construction without basements which limits vapor intrusion into enclosed structures. Given the proximity to the surface water body and the near-grade aquifer, any future buildings proposed for the property is assumed to have similar construction.

**Plant 2**

**Groundwater:** If there were ever plans for construction in any contaminated areas a Health & Safety Plan will be required to identify extent of the contaminated area and notify any workers of possible exposure as well as possible additional remediation and/or engineering controls implemented to decrease potential direct contact issues.

**Surface soil:** The direct contact exposure pathway to surface soil is currently limited because of the inactive nature of the site, the fenced and limited access, the presence of asphalt paving over portions of the site, and the presence of clean fill (up to two feet thick) cover material in the areas of previously exposed soil.

**Subsurface soil:** The land is currently zoned for industrial use, and is not anticipated to change in the foreseeable future. If there were ever plans for construction in any contaminated areas a Health & Safety Plan will be required to identify extent of the contaminated area and notify any workers of possible exposure as well as possible additional remediation and/or engineering controls implemented to decrease potential direct contact issues.

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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 Pennzoil Wax Partner Co. facility, EPA ID #PAD 004 329 835, located at Two Main Street, P.O. Box 415, Rouseville, PA 16344 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) \_\_\_\_\_ /s/ \_\_\_\_\_                      Date 4/19/96  
                  (print)        Kevin Bilash  
                  (title)        RCRA Project Manager

Supervisor      (signature) \_\_\_\_\_ /s/ \_\_\_\_\_                      Date 4/19/96  
                  (print)        Paul Gotthold  
                  (title)        Chief, PA Operations Branch  
                  (EPA Region or State) EPA Region III

**Locations where References may be found:**

RCRA File Room - 11th Floor  
EPA Region III  
1650 Arch Street  
Philadelphia, PA 19103-2029

**Contact telephone and e-mail numbers:**

(name)            Kevin Bilash  
(phone #)        215-814-2796  
(e-mail)         bilash.kevin@epa.gov

**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.**

