

**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:** American Refining Group  
**Facility Address:** 77 North Kendall Avenue, Bradford and Foster Townships, PA 16701  
**Facility EPA ID #:** PAD 001 604 693

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 References below
Air (indoors) <sup>2</sup>	X			OSHA workplace standards are applicable. See References below
Surface Soil (e.g., <2 ft)	X			See References below
Surface Water	X			Sheen has occurred occasionally. See References below
Sediment	X			See References (4) and (5) below
Subsurf. Soil (e.g., >2 ft)	X			See References (4) and (5) below
Air (outdoors)	X			OSHA workplace standards are applicable

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

References:

- (1) US EPA Environmental Indicator Inspection Reports for American Refining Group of July 2001
- (2) Soils and Groundwater Investigation Report of January 1994
- (3) PADEP Act 2 Facility Characterization Report of July 1999
- (4) ARG Refinery PA Land Recycling Program Site Characterization Report of June 2004
- (5) ARG Refinery PA Land Recycling Program Baseline Human Health Risk Assessment of June 2004

During the past few years, environmental investigations and subsequent interim measures actions have been conducted. Remedial activities for containment and recovery of Separate Phase Liquid (SPL) are being conducted in response to the requirements outlined PADEP Notice of Violations which was issued in August 2002.

**Groundwater**

As documented in the above references (2) thru (5), analytical samples collected from the site groundwater contain Total petroleum hydrocarbons (TPH), Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), and metals.

**Surface and Subsurface Soil**

References (3) thru (5) included results of soil boring samples. TPH, VOCs, SVOCs, and metals were detected at elevated concentrations.

**Surface Water and Sediment**

Based on references (4) and (5) and for the purposes of this Environmental Indicator Determination, surface water and sediment could reasonably be contaminated.

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Indoor and Outdoor Air

Because the SPL and impacted groundwater plume is located beneath building structures, there exists the potential for volatilized chemical emissions through on-site building foundations.

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.

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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)

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

Current complete exposure pathways potentially exist for residents, typical plant workers, and construction workers. There are no day-care facilities, food production or recreation activities in the immediate vicinity of the property. Trespassing is minimized since the facility is fenced, patrolled and maintains strict access control.

**Groundwater**

Groundwater is not used as a domestic water supply so all pathways associated with groundwater, except facility workers who are required to enter sewer areas and construction workers in excavated areas, are also

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considered incomplete. Construction workers engaged in excavated activities below the groundwater table are subject to Health and Safety procedures of the facility, including the use of Personal Protective Equipment (PPE).

**Indoor and Outdoor Air**

Because SPL (Separate Phase Liquid) and impacted groundwater plume is located under beneath facility buildings, the pathway for indoor air to workers and construction workers is considered complete. There is evidence that Foster Brook Facility South (EU4) contains soil and groundwater impacted by metals, TPH, VOCs and SVOCs. Additionally, SPL has been detected in this exposure unit.

**Surface and Subsurface Soil**

Most area of the facility is covered by gravel and asphalt capping. Therefore, the pathways associated with surface soil and surface soil for intrusive activities (residents and typical plant workers) are considered incomplete. For SPL-impacted areas within site boundaries, a complete pathway exists for construction workers who maybe required to excavate, repair and replace utility lines and street sections. Construction workers engaged in on-site excavation activities are subject to the Health and Safety procedures of the facility, including the use of PPE.

**Surface Water and Sediment**

The only surface water pathways considered complete for this facility are for workers and construction workers who may, on occasion, be required to perform oil spill cleanup and to work on or inspect facility outfalls to Tunungwant Creek. The only sediment pathway considered complete is for plant/construction workers who may, on occasion, perform oil spill cleanup and work on or inspect facility outfalls to Tunungwant Creek. Typical plant workers do not perform any work activities where there may be complete exposure pathways to sediment.

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

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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):**

**Groundwater (Workers and Construction Workers)**

Constituents are present in groundwater at concentrations that potentially could pose a health concern if construction workers work in excavations and sewer areas where groundwater is encountered. The ARG Refinery requires that all excavation and sewer entry activities follow plant health and safety policies. Personnel from the facility Health and Safety Department review and approve all excavation activities at the facility. Because site workers and construction workers are required to follow these plant procedures, exposures are not expected to be significant. In addition, results from the recent installation of horizontal and vertical recover wells, interim SPL interceptor trenches and manual SPL Recovery program have indicated that the control of oil seepage to the Tunungwant Creek has been effective.

**Indoor and Outdoor Air (Residents, Workers, Construction Workers)**

For the indoor and outdoor pathways, vapor emissions modeling was conducted to estimate exposure concentrations for potential chemicals of concern via inhalation (see Reference (5) in #2). Results of the modeling indicate that air emissions from the facility were not above the OSHA Permissible Exposure Limits (PELs) and any exposure would not reasonably be expected to be significant. A soil vapor mitigation/passive ventilation system at Foster Brook Facility South (EU4) can reduce indoor soil gas levels significantly when it becomes operational in spring 2005.

**Surface Water and Sediment (Workers, Construction Workers)**

Interim remedial measures are in place to prevent the discharge of SPL to Tunungwant Creek. Most of the SPL plumes are very localized and are considerable distance from the creek. Given that these SPL plumes are a result of historical spills, the SPL plumes appear to be relatively immobile and the source removal of these SPL plumes will reduce and prevent potential migration of these plumes to the creek.

Sediment is known to be contaminated at the site. There is the potential for release of contaminated groundwater to the creek which could effect sediment quality. It is anticipated that discharge of impacted

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groundwater would be small compared to the flow of the receiving water bodies and the transport of surficial sediment into and out of the site. In addition, sediments may be deposited from upstream and downstream of Tunungwant Creek due to tidal influences. For these reasons, it is unlikely that surface water or sediment would pose a human health concern and any potential exposure would be of limited frequency and short duration for workers and construction workers.

**Surface and Subsurface Soil (Construction Workers)**

Constituents are present in surface and subsurface soil at concentrations that potentially could pose a health concern for construction workers work in excavation areas. Construction workers engaged in excavation activities are subject to the Health and Safety procedures of the facility, including PPE. Because construction workers are required to follow these plant procedures, exposures are not expected to be significant.

<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.

5. Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

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- \_\_\_\_\_ 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 American Refining Group facility, EPA ID # PAD 001 604 693, located at 77 North Kendall Avenue, Bradford, PA 16701 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 1-4-05  
(print) Hon Lee  
(title) Remedial Project Manager

Supervisor (signature) \_\_\_\_\_ /s/ \_\_\_\_\_ Date 1-4-05  
(print) Paul Gotthold  
(title) Chief, PA Operations Branch  
(EPA Region or State) US EPA Region 3

**Locations where References may be found:**

US EPA Region III  
1650 Arch Street  
Philadelphia, PA 19103  
Attn: 3WC22

Note: This EI revises and replaces the determination made in 2002.

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

(name) Hon Lee  
(phone #) 215-814-3419  
(e-mail) lee.hon@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.**

