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: **TAPI Puerto Rico, Inc.**
Facility Address: **Rd. #3, Km 143, P.O. Box 10010, Guayama, Puerto Rico, 00785**
Facility EPA ID #: **PRD090613357**

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).

FACILITY DESCRIPTION

Site Location and Setting

The TAPI Puerto Rico Inc. facility is located at State Road No. 3, km 143, in Guayama, Puerto Rico. The property encompasses 45 acres. Twenty-five acres have been developed for industrial purposes. The remaining land is undeveloped and is temporarily used as a material storage area, a machine shop area, and an office area. The Phillips Petroleum Refinery is located to the east of the TAPI property. The AES Puerto Rico electric cogeneration facility is located to the south of the TAPI property. Undeveloped land is adjacent to the property to the north and west.

The TAPI facility is located on the southeastern coastal plain of Puerto Rico. The facility is about 1.1 miles north of the Caribbean Sea and 3.5 miles south of the foothills of the Cordillera Central Mountains. The Town of Guayama is located approximately 2.2 miles to the northeast and Puente Jobos Ward is located approximately one mile to the northwest. The Town of Reunión is located about 0.7 miles to the northeast. An EPA Superfund site (Fibers Public Supply Wells) is located approximately one mile to the northeast.

Facility Operations

From 1978 to 1996, SK&F Lab Company (SKF), a subsidiary of Smith Kline Beecham Chemical Division, operated a bulk pharmaceutical products facility at the site. Since 1997, the facility has been successively owned and operated by Chemsource, API Industries, and TAPI. TAPI manufactures bulk active pharmaceutical ingredients. Facility operations include chemical manufacturing processes with related support operations. The primary on-site structures include four separate bulk chemical manufacturing process plants, a RCRA hazardous waste storage and incineration area, laboratory facilities, warehouses, a process wastewater treatment facility, and administrative and other support buildings. The three main manufacturing buildings are identified as Guayama I, II, and III. One section of the Guayama III building is a Pilot Plant, which is called Guayama IV. A site map is presented in Attachment 1.

RCRA Hazardous Waste Management Program

The original RCRA Operating Permit was issued to the former owner of the facility, SK&F Lab in 1989. The 1989 RCRA Permit authorized SK&F to store hazardous waste in containers, and in above-ground tank systems, and to treat hazardous waste in incinerator units. In 1997, the ownership of the facility was transferred to Chemsource. In 2001 ownership of the facility was transferred to API, and then again transferred to TAPI in 2007. Now TAPI is the sole owner and operator of the Guayama facility, and therefore responsible for managing the facility pursuant to the terms of the operating permit and all applicable RCRA requirements. A permit renewal application was submitted to EPA in March 1999, which was recently public noticed on August 14, 2007. If issued, this RCRA Permit renewal will authorize TAPI to manage one (1) hazardous waste container storage area and eight (8) existing hazardous waste tank systems (tank system numbers: 408, 430, 436, 450, 451, 452, 453 and 604). In addition, there are certain requirements for the operation of two existing (2) hazardous waste incinerators. The air emissions of the both incinerators is now regulated under the maximum achievable control technology (MACT) rule promulgated under the Clean Air ACT (CAA). TAPI is permitted to manage spent halogenated and non-halogenated solvents (F001, F002, F003, F005) and ignitable waste (D001) in its hazardous waste management facilities. The Permit

additionally contains requirements for corrective action activities which is on-going, as described in the following section.

RCRA Corrective Action Program

In 1987, the Puerto Rico Environmental Quality Board (EQB) conducted a RCRA Facility Assessment (RFA) at the facility. The Final RFA Report was dated March 11, 1988 (Ref. 1). The RFA identified 62 Solid Waste Management Units (SWMU) and Areas of Concern (AOC) associated with facility operations. The RFA concluded that there was no evidence of release of hazardous wastes and hazardous constituents from these units and that no further corrective action is required.

By letter dated April 16, 2002, the United States Environmental Protection Agency, Region II (EPA) notified the facility that data gathered from a CERCLA study of the Fibers Public Supply Wells Superfund Site indicated a potential impact to groundwater at the facility. Groundwater sampling of two of the facility's production wells tentatively identified di-isopropyl ether (IPE) in groundwater at concentrations up to 1700 micrograms per liter (ug/L). Based on this groundwater results, EPA required facility to implement a SWMU Assessment Plan in accordance with Condition III.E of the facility's RCRA Permit. An Environmental Site Assessment consisting of a soil and groundwater investigation is currently being conducted to delineate the extend of the contamination at the TAPI facility in accordance with the provisions of an EPA-approved SWMU Assessment Work Plan, Revision 3.0, dated June 2004 (Ref. 2). Phase 1 of the site assessment completed in July 2005, in which the groundwater contamination was confirmed, and warranted further corrective action investigation to be carried out. Phase 2 of the site assessment was completed in June 2007. The sampling results of Phase 2 investigation indicates that further groundwater investigation is necessary to complete the delineation of potentially impacted groundwater at the facility.

References:

1. Puerto Rico Environmental Quality Board, Final RCRA Facility Assessment Report, March 1988.
2. Anderson, Mulholland & Associates, Inc. (AMAI), June 2004. Solid Waste Management Unit Assessment Plan, Revision 3.0, API Industries, Inc., Guayama, Puerto Rico.
3. Anderson, Mulholland & Associates, Inc. (AMAI), August 31, 2005. Solid Waste Management Unit Assessment, Preliminary Findings, API Industries, Inc., Guayama, Puerto Rico.
4. Anderson, Mulholland & Associates, Inc. (AMAI), July 10, 2007. Memorandum - Solid Waste Management Unit Assessment, Phase 2 Investigation Findings, TAPI, Puerto Rico, Inc., Guayama, Puerto Rico.

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)?

Media	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			Benzene, chlorobenzene, ethylbenzene, methylene chloride, naphthalene, diisopropylether (IPE), antimony, arsenic, lead, thallium, vanadium
Air (indoors) [2]		X		See discussion below
Surface Soil (e.g., <2 ft)		X		See discussion below
Surface Water		X		See discussion below
Sediment		X		See discussion below
Subsurface Soil (e.g., >2 ft)		X		See discussion below
Air (outdoors)		X		See discussion 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):

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.

Groundwater:

Groundwater samples were collected from 13 direct-push sampling locations, deep well MW-1B, and two operating production wells SKF-721 and SKF-722 as part of Environmental Site Assessment (ESA) work in April 2005 (Ref. 1). At the direct-push locations, the shallow groundwater was sampled; at wells MW-1B, SKF-721, and SKF-722, the deeper groundwater was sampled. The samples were analyzed for volatile organic compounds (VOCs) including diisopropylether (IPE), base neutral/acid extractable compounds (BNAs), and metals. Deep well MW-1B, which was installed in April 2005, is screened from 30 to 40 ft below ground surface (bgs).

Groundwater samples were also collected in April 2007 from nine monitoring wells screened in the shallow groundwater (Ref. 2). Three of the monitoring wells were installed in April 2005 and six in March 2007. The samples were analyzed for constituents of concern (COCs) detected in shallow groundwater above screening levels during first phase of site assessment in April 2005. The COCs were IPE, benzene, chlorobenzene, ethylbenzene, methylene chloride, naphthalene, antimony, arsenic, lead, thallium, and vanadium. Also in April 2007, deep well MW-1B and production wells SKF-721 and SKF-722 were re-sampled for IPE (Ref. 2).

A map showing the locations of the direct-push sampling points, monitoring wells, and production wells is provided in Attachment 1.

Groundwater elevation and flow direction maps were constructed from synoptic water level measurements collected in April 2007 (Ref. 2). The data show that the general groundwater flow direction at the facility is to the south and southeast. Groundwater elevations at the facility varied from about 7.5 to 11.5 ft above mean sea level (amsl). The depth to groundwater varied from about 6.3 to 8.8 ft bgs. Comparison of depths to water at individual wells from measurement events in June 2005, April 2007, and August 2007 showed a variation of up to about 2.3 ft, which is attributed to seasonal effects.

Groundwater results from the various phases of investigation were compared to groundwater screening levels. Groundwater screening levels were obtained from EPA Maximum Contaminant Levels (MCLs) and, where MCLs were not available, EPA Region 3 tap water RBCs (EPA Region 3, April 2007) were used. Texas Risk Reduction Program (TRRP) protective concentration levels (PCLs)(TRRP, June 2007) were used for groundwater screening levels for IPE, as MCLs, Region 3 tap water RBCs, or EPA Region 9 PRGs were not available. For lead, the EPA action level of 15 ug/L was used as a groundwater screening level. The constituents of concern that exceeded groundwater screening levels, their maximum concentrations, and the location of the maximu m concentrations are shown in the table below.

Groundwater Contaminant	Screening Levels (ug/L)	Maximum Concentration (ug/L)	Location of Maximum
Benzene	5	85.2	Direct-push sampling location DP-4 (Ref. 1)
Chlorobenzene	100	457	Direct-push sampling location DP-4 (Ref. 1)
Ethybenzene	700	778	Direct-push sampling location DP-3 (Ref. 1)
Methylene chloride	5	674	Direct-push sampling location DP-3 (Ref. 1)
Naphthalene	6.5	26.5	Direct-push sampling location DP-3 (Ref. 1)
Di-isopropylether (IPE)	2400	4570	Well MW-1B (Ref. 1)
Antimony	6	10.1 B	Direct-push sampling location DP-3 (Ref. 1)
Arsenic	10	65.8	Direct-push sampling location DP-3 (Ref. 1)
Lead	15	19.1	Direct-push sampling location DP-5 (Ref. 1)
Thallium	2	3.7 B	Direct-push sampling location DP-1 (Ref. 1)

Groundwater Contaminant	Screening Levels (ug/L)	Maximum Concentration (ug/L)	Location of Maximum
Vanadium	37	671	Direct-push sampling location DP-3 (Ref. 1)

Notes: All screening levels are EPA MCLs, except for naphthalene and vanadium, which are EPA Region 3 tap water RBCs and IPE, which is a TRRP PCL. The 'B' qualifier indicates that the result was greater than the method limit detection, but less than the reporting limit. Metal results using direct-push sampling are typically biased high due to entrained sediment in the samples. Antimony, lead, thallium, and vanadium were not detected above screening levels during follow-up groundwater sampling at monitoring wells.

Soil Vapor/Indoor Air:

The results of the Environmental Site Assessment (Refs. 1 and 2) obtained thus far indicate that impacted soil and/or groundwater may exist within 100 ft of occupied on-site buildings. EPA guidance (Ref. 5) indicates that under this scenario a soil gas sample should be collected to evaluate potential worker exposure due to intrusion of volatile contaminants from soil and/or groundwater to indoor air (i.e., the vapor intrusion pathway). Consequently, a soil gas sample was collected on August 10, 2007 and analyzed for volatile constituents detected in either soil or groundwater (acetone, benzene, carbon disulfide, chlorobenzene, ethylbenzene, IPE, methylene chloride, and naphthalene).

The soil gas sample was collected beneath a concrete-covered road about 13 ft south of the facility control room, which is the occupied building nearest to the impacted areas. The control room is located about 75 ft east of direct-push point DP-7, which exhibited the highest concentration of IPE (2890 ug/L) in shallow groundwater. The control room is also within about 100 ft of other sampling locations (DP-6, DP-8, DP-9, DP-11, and DP-12) showing impact to soil or groundwater. The location was selected so as to be representative of sub-slab conditions beneath the control room. Soil gas sampling beneath the road was performed due to easier access than sub-slab of the control room which was difficult due to operational issues. Sampling access beneath the road was made by drilling through the concrete and several inches into the subsoil. Sampling hose was placed in the drill hole and sealed with clay to prevent influx of ambient air. The sample was collected over a four-hour period using a 6-liter Summa canister. Samples were analyzed using EPA Method TO-15. Since IPE was not part of the suite of laboratory calibration compounds, the laboratory performed a library search of the gas chromatographic/mass-spectra to evaluate for its presence. IPE was determined to be non-detect.

Sub-slab soil vapor screening levels were derived using the equations presented in EPA's vapor intrusion guidance (Ref. 5, pgs. D-4 and D-5) employing an attenuation factor of 0.1 (Ref. 5, pg. F-3) to account for concentration reduction due to vapor transport and building characteristics. Industrial exposure assumptions were used for the calculations. Screening levels for non-carcinogenic compounds were determined using a hazard quotient of 1; screening levels for carcinogenic compounds were determined using a risk level of 10^{-6}. If a compound exhibited both non-carcinogenic and carcinogenic effect, the lower of the screening levels was used. The screening level calculations are documented in Attachment 2 and summarized in the table below.

Comparison of the sub-slab vapor sampling results with the screening levels, which are presented in the table below, show that no screening levels were exceeded. Therefore, no impact to human health is indicated from the vapor intrusion pathway.

Contaminant	Screening Level (ug/m^3)	Sub-Slab Soil Vapor Concentration (ug/m^3)

Contaminant	Screening Level (ug/m^3)	Sub-Slab Soil Vapor Concentration (ug/m^3)
Acetone	3500	90.5
Benzene	5.2	2.9 J
Carbon disulfide	7000	ND (5)
Chlorobenzene	600	ND (7.4)
Ethylbenzene	37	ND (6.9)
Methylene chloride	87	ND (5.6)
Naphthalene	30	ND (21)
Di-isopropylether (IPE)	4000	ND (6.8)

Notes: Screening levels were derived as discussed above and as shown in Attachment 2. The 'J' qualifier indicates an estimated value. 'ND' indicates that the compound was not detected at or above the reporting limit shown in parentheses. The reporting limit for IPE was estimated using a reporting limit of 1.6 parts per billion by volume (ppbv) as occurs for other analyzed compounds.

Since there is no residential land use downgradient of the TAPI facility, no off-site impact to human health is indicated from the vapor intrusion pathway.

Surface Soil (< 2 ft):

Surface soil sampling was not performed since there was no visual evidence of impact to surface soil. As per the objectives of the SWMU Assessment (Ref. 1), soil sampling focused on subsurface soil as discussed below.

Surface Water/Sediment:

There are no surface water bodies located within about 1,100 feet of the facility boundaries. There have been no documented impacts to surface water or sediment as a result of the activities conducted at this facility. There are also no surface water intakes located downstream of the facility. Therefore, no surface water or sediment contamination is indicated.

Subsurface Soil (> 2 ft):

A total of 8 subsurface soil samples were collected at 7 locations for VOC, BNA and metals analysis during the SWMU Assessment Work in April 2005 (Ref. 2). The soil sampling locations were co-located with groundwater sampling locations, which are in closest proximity to potential sources of impact to soil and groundwater.

Subsurface soil results were compared to soil ingestion/dermal risk-based screening levels (RBSLs). RBSLs were obtained for an industrial on-site worker exposure scenario from the lower of EPA Region 3 ingestion risk-based concentrations (RBCs)(EPA Region 3, April 2007) and ingestion/dermal soil screening levels (SSLs) from EPA's Supplemental Guidance for Developing Soil Screening Levels for Superfund (Ref. 3). The Texas Risk Reduction Program (TRRP) protective concentration level (PCL)(TRRP, March 2006) was employed for IPE since other screening levels were not available. A soil screening level of 400 mg/kg was used for lead (Ref. 8). No VOCs or BNAs were detected in the subsurface soil above screening levels. Arsenic was detected above its screening level of 1.9 ug/kg at a maximum concentration of 7.2 ug/kg. However, this maximum concentration is below the typical background level of 20 mg/kg for Puerto Rico, which indicates no additional risk to human health above background. Therefore, no impact to human health from subsurface soil is indicated.

Air (outdoors):

A total of 8 subsurface soil samples were collected at 7 locations for VOC, BNA and metals analysis during the SWMU Assessment Work in April 2005 (Ref. 1).

The soil results were compared to risk-based screening levels (RBSLs) for the inhalation of volatile/particulates in outdoor air exposure pathway. Screening levels were obtained from EPA SSLs (Ref. 3) for an industrial exposure scenario. Since EPA SSLs were not available for the outdoor air exposure pathway for two of the detected constituents in soil (acetone or 2-butanone), EPA Region 9 preliminary remediation goals (PRGs) (EPA, Region 9, October 2004) were employed for these two constituents.

No constituents were detected in surface or subsurface soil above the outdoor air screening levels. Therefore, no impact to human health from outdoor air is indicated.

References:

1. Anderson, Mulholland & Associates, Inc. (AMAI), August 31, 2005. Solid Waste Management Unit Assessment, Preliminary Findings, API Industries, Inc., Guayama, Puerto Rico.

2. Anderson, Mulholland & Associates, Inc. (AMAI), July 10, 2007. Memorandum - Solid Waste Management Unit Assessment, Phase 2 Investigation Findings, TAPI, Puerto Rico, Inc., Guayama, Puerto Rico.

3. United States Environmental Protection Agency (EPA), 2001. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

4. U.S. Environmental Protection Agency (EPA), 1994, OSWER Directive #9355.4-12.

5. United States Environmental Protection Agency (EPA), 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. Washington, D.C.: Office of Solid Waste and Emergency Response.

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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
Groundwater	NO	NO	NO	YES	NO	NO	NO
~~Air (indoors)~~	___	___	___				
~~Soil (surface, e.g., <2 ft)~~	___	___	___	___	___	___	___
~~Surface Water~~	___	___			___	___	___
~~Sediment~~	___	___			___	___	___
~~Soil (subsurface 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).

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):

Residents Scenario:
Groundwater – There are no water supply wells downgradient of the TAPI facility that are used for public or private drinking water purpose. Land immediately south of the TAPI site (i.e., downgradient of the groundwater flow) is occupied by AES Puerto Rico, Ltd., which operates an electric cogeneration facility at the site. The AES facility does not operate water supply wells (Ref. 1). The Chevron Phillips Chemical Puerto Rico Core, Inc. facility is located to the east and southeast of the TAPI site. From the EI CA-725 Checklist completed in 2006, it is clear that no water supply wells are used for drinking water purpose at this facility (Ref. 2). Therefore, no completed exposure pathway occurs for residential or other potential users of groundwater.

Workers scenario:
Groundwater - TAPI's on-site production wells are not used as potable water use. Drinking water for site workers is provided by an off-site bottle-water vendor. Process water is provided by PRASA. Water from on-site production wells is used only for utilities and as a firewater supply. Therefore, no completed exposure pathway occurs for regular worker exposure to contaminated groundwater.

Day Care scenario:
Groundwater - There is no complete pathway, since there are no downgradient water supply wells that service day care centers.

Construction Workers scenario:
Groundwater – Construction workers may come into direct contact with contaminated groundwater during subsurface activities.

Trespasser scenario:
Groundwater - This is not a complete pathway, since the entire facility is fenced, and 24-hour guards are on duty to ensure that no trespasser enter the facility.

Recreation scenario:
Groundwater - This is not a complete pathway, since there are no on-site recreational facilities.

Food scenario:
Groundwater - This is not a complete pathway, since no food items are grown or produced in contact with impacted groundwater.

References:

1. E-mail correspondence with AES Puerto Rico Ltd. Environmental Department, August 24, 2007.

2. Documentation of Environmental Indicator Determination, RCRA Corrective Action, Environmental Indicator (EI) RCRA Info Code (CA725), Current Human Exposure Under Control, Chevron Phillips Chemical Puerto Rico Core, Inc., May 2002

[3] 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"**[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):

As discussed in Question 3, construction workers may be exposed to contaminated groundwater during subsurface activities. However, no construction activities are currently planned in the areas of concern. Nevertheless, any construction workers conducting subsurface activities at TAPI must first obtain a permit from the facility, which is to be reviewed by Health and Safety personnel. The permit process provides for protection of construction workers through adherence to applicable OSHA regulations (e.g., PPE use) or by not allowing intrusive activities or disturbances to occur at areas with groundwater contamination above screening criteria. Therefore, construction worker exposure to groundwater contamination is not expected to be significant.

[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.

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 **TAPI Puerto Rico, Inc**. facility, EPA ID # PRD090613357, located in Guayama, Puerto Rico 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 _____ Date: 9/16/2007
Sin-Kie Tjho, Project Manager
RCRA Programs Branch
EPA Region 2

Supervisor Original signed by: _____ Date: 9/18/2007
Dale J. Carpenter, Section Chief
RCRA Programs Branch
EPA Region 2

Approved by _____ Date: 9/18/2007
Adolph S. Everett, Chief
RCRA Programs Branch
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Locations where References may be found:
U.S. Environmental Protection Agency - Region 2
RCRA File Room
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New York, New York 10007

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Attachments

The following attachments have been provided to support this EI determination.

Attachment 1 - Facility map
Attachment 2 - Sub-slab soil vapor screening levels for industrial exposure