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:	Parker Solvents Company, Inc. (PSC)
Facility Address:	8909 Mabelvale Pike, Little Rock, AR
Facility EPA ID #:	Ard035565068

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 Location, Description and Environmental Setting:

The Parker Solvents Company (PSC) facility is a 1.2-acre site located at 8909 Mabelvale Pike, Little Rock, Arkansas 72209. PSC is a solvent blending, temporary bulk storage, sales, and distribution facility. The facility has been in continuous operation since 1956.

Facility operations include the storage of bulk industrial solvents in above ground tanks, a piping system that connects the storage tanks to the packaging area, and bulk product loading and unloading. Site structures include an office that is connected to a warehouse, a solvent blending area, a wastewater treatment building, and a tank farm to store bulk solvents. The tank farm is constructed within a single containment wall holding 23 above-ground storage tanks, ranging in capacity from 1,000 gallons to 15,100 gallons, and two 1,000-gallon fuel (diesel and gasoline) storage tanks. Solvents are also stored in the warehouse in 55-gallon drums. A gravel parking lot lies to the north of the structure and tank farm. The area between the structure and tank farm is also gravel covered.
The site is bordered to the west and north by Mabelvale Pike Road. Across Mabelvale Pike to the west is the main Arkansas Highway and Transportation Department (AHTD) complex. Two single-family residences lie to the north of the PSC site directly across Mabelvale Pike Road. Most of the area surrounding the PSC site is occupied by the AHTD. The AHTD has offices to the northeast of the PSC site and an equipment storage yard to the east of the PSC site. AHTD storage and maintenance facilities are west and south of the PSC site.

Surface water within 1.5 miles of the facility consists of Fourche Creek and several small surface impoundments. However, surface water potentially affected by the PSC site is only located at Wesson Spring and Fourche Creek. Wesson Spring is approximately 500 feet north of the PSC site boundary. The Wesson Spring is downgradient of the PSC site and is a natural discharge point for shallow groundwater. A pond (Wesson Pond) lies just north of the Wesson Spring and receives spring discharge and rainwater, as well as some limited surface drainage. The main channel of Fourche Creek passes north and west of the facility. Only a tributary of Fourche Creek comes within the 0.5-mile radius of PSC near a sewage disposal pond. Both Nash Creek and Young Creek pass within a 0.5-mile radius east of the site. Most of the tributaries to these named creeks are intermittent streams within the area of concern. Surface drainage across the PSC site flows east towards the tank farm and then south where it meets the AHTD drainage pathway and flows east across the AHTD site. Surface water in the area of PSC is not known or reasonably suspected to be used for drinking, irrigation or recreational purposes.

Groundwater flow from the PSC site is generally in a northeasterly direction. Shallow groundwater in the area of PSC is not known or reasonably suspected to be used for drinking or irrigation purposes.

Facility Regulatory History:

On 8-7-91, the Arkansas Department of Environmental Quality (ADEQ) conducted a Compliance Evaluation Inspection (CEI) at the facility which determined that hazardous wastes had been released and migrated outside the facility boundary. On 3-30-92, PSC entered a Consent Administrative Order (CAO) with ADEQ that required additional investigation of soil, groundwater, surface water, and sediments at the site and adjacent properties. PSC submitted a Site Investigation Report (SRI) on 8-3-93 documenting contamination of those media. Additional investigations have been conducted by PSC under ADEQ supervision and the results are presented in a Remedial Facility Investigation (RFI) Report dated 11-95. PSC submitted a Supplemental Site Investigation Report (SSIR) in 3-97 and a Corrective Measures Study (CMS) in 9-97 (revised in 9-99) that evaluated various engineering alternatives addressing long-term site risks and contamination. PSC also elected to perform a site specific risk assessment (RA) to evaluate potential risks to human health and the environment and to help establish cleanup goals and performance standards. PSC submitted the Risk Assessment Report (RAR) to ADEQ in 11-01. Due to a number of uncertainties and omissions, ADEQ developed its own RA and is in the process of finalizing that document. ADEQ is also in the process of developing a final cleanup plan for the facility (that will include public input) in a Remedial Action Decision Document (RADD).

Facility Corrective Action History:

PSC has installed a number of on-site and off-site groundwater monitoring wells and has been monitoring the groundwater at the site and adjacent properties since November 1995. As an interim measure, PSC has been operating a carbon absorption system to treat shallow contaminated groundwater and water at the discharge of Wesson Spring.

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	x			See below for all media
Air (indoors)[2]		x		
Surface Soil (e.g., <2 ft)		x		
Surface Water	x			
Sediment		x		
Subsurf. Soil (e.g., >2 ft)		x		
Air (outdoors)	x			

___ 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.

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[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.

Rationale and Reference(s):

The primary sources of contamination present on and off the PSC site were related to releases and spills associated with PSC's solvent blending and production. The releases have resulted in chlorinated volatile organic constituents (VOCs) present in onsite soil, on- and offsite surface water, and groundwater.

The chemicals of potential concern (COPCs) at the PSC site are moderately to highly volatile, weakly or moderately sorbed to soil, and (based on calculated or observed oil-water partition coefficients) have low potential for bioaccumulation in fish or plants. These properties suggest that residual COPCs in soil at the PSC site may desorb into groundwater. Affected soil at the PSC site may release VOCs to the outdoor environment, whereas releases of VOCs from onsite or offsite groundwater may affect outdoor or indoor air. This may occur as a result of VOC volatilization from groundwater, migration of the vapors through soil pore spaces, and the release of vapors at the surface.

The following COPCs were initially determined to exceed preliminary risk screening criteria in soils, surface water, and groundwater: acetone, benzene, 2-butanone, chloroethane, 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, 1,2-dichloroethene (total), ethylbenzene, 4-methyl-2-pentanone, methylene chloride, styrene, tetrachloroethene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, vinyl chloride, and xylene.

The ADEQ "Draft Human Health and Ecological Risk Assessment" (HHRA & ERA) evaluated the COPCs in each affected media (according to all potentially complete exposure pathways) to determine the existence of any human health risks exceeding a noncancer Hazard Index (HI) of 1 and/or a lifetime cancer risk (LCR) level of 1.0E-04. The risk criteria and conclusions of that Draft HHRA are used as the basis for the responses in this review.

Groundwater:

Chemicals of concern (COCs), which are risk drivers, in groundwater that were determined by the Draft HHRA to pose potentially unacceptable risks to human health are 1,2-dichloroethene, tetrachloroethene, trichloroethene, vinyl chloride, and xylene.

Air (indoors):

The Johnson and Ettinger (J&E) Model for Subsurface Vapor Intrusion into Buildings was utilized in the Draft HHRA to evaluate the potential for vapor intrusion into on-site PSC buildings, off-site AHTD buildings adjacent to the PSC facility, and residential structures down-gradient from the PSC facility. The evaluation showed that there were no unacceptable cancer or noncancer risks posed to any receptors (specifically, PSC indoor workers, AHTD indoor workers, and offsite residents) due to inhalation of indoor air.

Surface Soil (e.g. < 2ft):

The Draft HHRA determined that there were no unacceptable cancer or noncancer risks posed to any receptors (specifically, PSC outdoor workers, construction workers, potential trespassers, and offsite residents) due to exposures to contaminants in PSC surface soil and sediment (sediment in the drainage pathways at the PSC site was included in the PSC surface soil evaluation, in order to differentiate from the evaluation of sediments in the Wesson Pond).

Surface Water / Stormwater:

COCs in stormwater (originating from the PSC site) that were determined by the Draft HHRA to pose potentially unacceptable risks to human health are 4-methyl-2-pentanone, tetrachloroethene, and trichloroethene.

Surface Water / Wesson Spring:

COCs in Wesson Spring surface water that were determined by the Draft HHRA to pose potentially unacceptable risks to human health are tetrachloroethene and trichloroethene.

Sediment / Wesson Pond:

Wesson Pond is located down gradient of the PSC site and is a part of the offsite investigation of the PSC property. The pond may receive surface water runoff from the site and is designed to retain water, however it is dry for approximately 6 months out of the year. In 1999, sediment samples were collected from the Wesson Pond and were analyzed for VOCs. No VOCs were detected in any of these samples, therefore no additional evaluation is necessary in regard to this potential exposure pathway.

Subsurface Soil (e.g. > 2ft):

The Draft HHRA determined that there were no unacceptable cancer or noncancer risks posed to any receptors (specifically, PSC outdoor workers, construction workers, potential trespassers, and offsite residents) due to exposures to PSC soil.

Air (Outdoors):

COCs in outdoor air that were determined by the Draft HHRA to pose potentially unacceptable risks to human health are benzene, chloroethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethene, ethylbenzene, 4-methyl-2-pentanone, methylene chloride, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylene.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

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

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

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):

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

Residents:

Groundwater: Direct use of offsite groundwater is unlikely, since city water is provided for the PSC site and its surrounding area and no groundwater wells in the area are known to exist. However, it is theoretically possible that residents may ingest the groundwater from Wesson Spring as drinking water. Therefore, this exposure pathway is considered potentially complete.

Surface Water: Surface water (stormwater) originating from the PSC site leaves the site and flows across the AHTD property. Nearby residents are not exposed to this stormwater runoff; therefore, this pathway is considered incomplete.

Outdoor Air: Groundwater may serve as a source of inhalation exposure for residents near the PSC site via migration of vapors through soil into outdoor air. Therefore, this pathway is considered potentially complete.

Day Care:

Neither the PSC or AHTD have an on-site day care center. There are no known day care centers located in areas that are potentially impacted by contaminants from the PSC facility. Therefore, this is considered an incomplete exposure pathway.

Trespassers:

The PSC and AHTD facilities are fenced on all sides with a gated entryway that is locked during non-business hours. Both business are occupied during normal business hours during the week and sporadically on weekends, making a trespassing event unlikely. Neither facility has areas that would be considered attractive for trespasser activity. ***Although trespasser activity is unlikely, this pathway is considered potentially complete.***

Groundwater: Potential trespassers are not expected to be directly exposed to contaminants in the groundwater at or near the PSC site. Therefore, this pathway is considered incomplete.

Surface Water: Trespassers could be exposed to contaminants in stormwater flowing across and leaving the PSC site. Therefore, this pathway is considered potentially complete.

Outdoor Air: Groundwater may serve as a source of inhalation exposure for trespassers at the PSC or AHTD sites via migration of vapors through soil into outdoor air. ***Therefore, this pathway is considered potentially complete.***

Recreation:

The only potential exposure pathway for recreational receptors is from surface water and volatilized contaminants at the Wesson Spring, a natural spring on nearby residential property that discharges shallow groundwater affected by low levels of contaminants released from the PSC site. Although this area is private property, it is unfenced. ***Recreational activity is unlikely; however, recreational receptors may wade in the spring.*** *Therefore, this exposure pathway is considered potentially complete.*

The Wesson Pond is a low-lying area down gradient from the Wesson Spring and may receive water discharged from the spring; however, the pond is completely dry at least six months out of the year. This leads to the conclusion that surface water received from Wesson Pond, if any, is minimal. No VOCs were detected in sediment in the Wesson Pond downstream of the spring. Therefore, this exposure pathway is considered incomplete.

Food:

Plants grown in soil irrigated with contaminated groundwater from Wesson Spring may take up the contaminants that are sorbed to soil. Thus, offsite residents consuming homegrown produce may be indirectly exposed to the contaminants in groundwater from Wesson Spring. Therefore, this pathway is considered complete.

AHTD Industrial Workers and Construction Workers:

Groundwater:

AHTD industrial-outdoor workers are not expected to come into direct contact with contaminated groundwater. Therefore, this pathway is considered incomplete.

Construction workers that may be working at the AHTD site could potentially be exposed to groundwater during excavation activities. Therefore, this pathway is considered complete.

Surface Water / Stormwater:

Both AHTD industrial and construction workers may be exposed to stormwater runoff originating from the PSC site. Therefore, these pathways are considered complete.

Outdoor Air:

AHTD outdoor industrial workers may be exposed to vapors from groundwater. Therefore, this pathway is considered complete.

Construction workers that may be working at the AHTD site could potentially be exposed to vapors from groundwater during excavation activities. Therefore, this pathway is considered complete.

PSC Industrial Workers and Construction Workers:

Groundwater:

PSC industrial outdoor workers, based on their daily activities, are not expected to come into contact with contaminated groundwater. Therefore, this pathway is considered incomplete.

Construction workers that may be working at the PSC site could potentially be exposed to groundwater during excavation activities. Therefore, this pathway is considered complete.

Surface Water / Storm Water:

Industrial and construction workers at the PSC site may be exposed to stormwater runoff at the PSC site. Therefore, these pathways are considered complete.

Outdoor Air:

PSC outdoor industrial workers could potentially be exposed to inhalation of vapors from groundwater. Therefore, this pathway is considered complete.

Construction workers working at the PSC site could potentially be exposed to inhalation of vapors from groundwater during excavation activities. Therefore, this pathway is considered complete.

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)?

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[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.

___ 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."

X 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):

Residents:

Groundwater: Estimated noncancer risks due to residential ingestion of contaminated groundwater from the PSC site were determined to have an associated HI of 1.9E+00. Estimated cancer risks due to residential ingestion of contaminated groundwater from the PSC site resulted in a cumulative LCR of 1.6E-04. Both of these estimated risks slightly exceed the protective cancer and noncancer risk-based criteria.

This exposure pathway is considered to be highly unlikely due to the fact that the Wesson Spring does not produce much water and carbon treatment is currently implemented at the spring. In addition, given the slight exceedance of the cancer and noncancer risk-based criteria used to evaluate the drinking water pathway, the fact that city water is known to be utilized for drinking water in the area of the PSC site, and the conservative assumptions used in the Draft HHRA, this pathway is not considered a significant source of risk to human health.

Outdoor Air: *Estimated noncancer risks for an offsite child and adult resident exposed via inhalation to COPCs in onsite soil through volatilization to outdoor air were determined to have an associated HI of 8.3E-01 and 3.8E-01, respectively, which are below the level of concern.* Estimated noncancer risks for an offsite child and adult resident exposed via inhalation to COPCs released from groundwater into outdoor air were determined to have an associated HI of 1.0E-02 and 4.6E-03, respectively, which are far below the level of concern.

Offsite child and adult resident inhalation exposures to COPCs in onsite soil through volatilization to outdoor air were within acceptable cancer risk limits with cumulative lifetime cancer risks of 2.1E-05 and 4.9E-05, respectively, which are below the level of concern. Offsite child and adult resident inhalation exposures to COPCs in groundwater through volatilization to outdoor air were within acceptable cancer risk limits with cumulative lifetime cancer risks of 2.2E-06 and 5.1E-06, respectively, which are below the level of concern.

Cancer and noncancer risk estimates for these exposure pathways demonstrate a lack of significant risks to human health from residential exposures to outdoor air.

Trespassers:

Surface Water and Outdoor Air: The cumulative noncancer risk estimate for potential trespasser exposures (ingestion, dermal contact, and inhalation) to stormwater originating from the PSC site resulted in an HI of 6.4E+00. The cumulative LCR for trespasser exposures to this stormwater predicted a cancer risk of 1.9E-04. These risks estimates are both slightly above the protective risk-based criteria. However, the PSC and

AHTD facilities are fenced on all sides with a gated entryway that is locked during non-business hours. Both businesses are occupied during normal business hours during the week and sporadically on weekends, making a trespassing event improbable. Neither facility has areas that would be considered highly attractive for trespasser activity. Given these circumstances, and the fact that conservative risk estimates are only slightly above risk-based criteria, this pathway is not expected to result in significant risk to human health.

Recreation:

Calculated cumulative noncancer risks for a recreational wader in the surface water at Wesson Spring resulted in an associated HI of 3.7E-03, which is far below the level of concern. The cumulative LCR for this receptor resulted in an estimated cancer risk of 8.1E-07, which is also far below the level of concern.

These estimated cancer and noncancer risks indicate that no significant risks are posed to human health from this exposure pathway.

Food:

Estimated noncancer risks due to residential consumption of homegrown fruits and vegetables irrigated with contaminated groundwater resulted in an associated HI of 7.7E-02 for a child and 1.3E-02 for and adult, far below the level of concern. Calculated LCRs resulting from residential ingestion of COPCs in homegrown fruits and vegetables irrigated with contaminated groundwater determined an associated cancer risk of 8.2E-07 for a child and 6.7E-07 for an adult, far below the level of concern.

These estimated cancer and noncancer risks indicate that no significant risks are posed to human health from this exposure pathway.

PSC & AHTD Industrial-Outdoor Workers and Construction Workers:

Groundwater / Outdoor Air:

The noncancer risks for PSC and AHTD industrial-outdoor workers (near the center of the contaminant plume originating from the PSC site) associated with inhalation exposures to COPCs released from groundwater into outdoor air reveal a HI of 8.3E+02. The cancer risks for this combined pathway have an cumulative LCR of 3.7E-02. These estimates indicate potential significant cancer and noncancer risks associated with an outdoor worker who spends 100% of every workday (8 hrs/day, 250 days/yr, 25yrs) working in the area of the PSC site that is above the center of the contaminant plume.

AHTD worker who spend the majority of their time near the perimeter of the AHTD property (where the active facilities are located) are not expected to be exposed to the same potential concentrations of volatiles in outdoor air. The cancer and noncancer risks for this exposure pathway reveal a cumulative LCR of 3.9E-05 and a HI of 1.6E-01, respectively, which are both below the levels of concern.

The cumulative cancer and noncancer risk for the PSC or AHTD construction worker exposed via inhalation, ingestion, and dermal contact to COPCs in the shallow groundwater have an associated LCR of 4.4E-02 and a HI of 3.3E+02, respectively. These estimates indicate significant potential cancer and noncancer risks to construction workers performing excavation activities in the vicinity of the contaminant plume.

Surface Water / Stormwater:

The cancer and noncancer risks for PSC and AHTD industrial-outdoor workers reveal a cumulative LCR of 8.2E-04 and a HI of 8.1E+00, respectively. These estimates indicate potential cancer and noncancer risks slightly above the levels of concern to PSC or AHTD workers performing activities in areas inundated by surface water drainage at or originating from the PSC site.

The cumulative cancer and noncancer risk for the PSC or AHTD construction worker exposed via inhalation, ingestion, and dermal contact to COPCs in stormwater runoff have an associated LCR of 8.2E-05 and a HI of 1.2E+01, respectively. These estimates indicate a potential noncancer risk slightly above the level of concern to construction workers performing activities in areas inundated by surface water drainage at or originating from the PSC site.

There are no low lying areas on either facility that retain water, surface drainage areas that are present are small and very shallow and are in areas that would not likely include any worker activities. Therefore, these exposure pathways are not expected to present significant risks to human health.

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

X 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):

As mentioned in question #4, the noncancer risks for PSC and AHTD industrial-outdoor workers (near the center of the contaminant plume originating from the PSC site) associated with inhalation exposures to COPCs released from groundwater into outdoor air reveal a HI of 8.3E+02. The cancer risks for this combined pathway have an cumulative LCR of 3.7E-02. These estimates indicate potential significant cancer and noncancer risks associated with an outdoor worker who spends 100% of every workday (8 hrs/day, 250 days/yr, 25yrs) working in areas of the PSC or AHTD sites that are above the center of the contaminant plume. However, these are worst-case scenarios; it is highly unlikely that a worker would spend a significant amount of time in these areas, since most of the operational areas are situated away from the plume. Calculated risks for PSC and AHTD outdoor workers performing activities away from the center of the plume are more plausible and applicable to the site-specific exposure scenarios at both sites.

The cumulative cancer and noncancer risks for the PSC or AHTD construction worker exposed via inhalation, ingestion, and dermal contact to COPCs in the shallow groundwater have an associated LCR of 4.4E-02 and a HI of 3.3E+02, respectively. These estimates indicate significant potential cancer and noncancer risks to construction workers performing excavation activities in the vicinity of the contaminant plume. However, both the PSC and the AHTD are aware and have acknowledged the groundwater contamination (contaminants and concentrations) present on their properties, and there are no current or planned construction activities at either site. Also, the PSC has verbally notified ADEQ that they have developed a Health and Safety Plan (HASP) for work-related activities at the site and personal-protective equipment (PPE) is offered to their employees. Even though no known construction activities are planned, the AHTD has been made aware of the contamination and the measures which should be in place for any future construction activities for employees or contractors in relation to any potential risks associated with exposure to contaminants in the shallow groundwater.

A Remedial Action Decision Document (RADD) is currently being drafted for the PSC which could require the facility to protect human health and the environment during any future construction activities via engineering controls, a HASP, and the use of PPE. The use of appropriate PPE would significantly decrease or eliminate the level of construction-worker exposures to contaminants in the shallow groundwater.

The monitoring well data chosen to develop the risk estimates for the groundwater-to-outdoor air pathway were based on worst case scenarios, and may not be the most representative for exposure inputs. A volatilization factor of 0.5 was used for groundwater to air, which conservatively estimates the release of VOCs to air via this exposure pathway. Workers were assumed to be exposed to chemicals (volatilized from groundwater) in outdoor air for 250 days per year for 25 years. This is quite conservative as well, since the median occupational tenure for full-time U.S. workers is 7.2 years. As defined by the United States Environmental Protection Agency (USEPA), occupational tenure is defined as "the cumulative number of years a person worked in his or her current occupation, regardless of the number of employers, interruptions in employment, or time spent in other occupations." Thus, the 25 year exposure duration assumed in this assessment may overestimate the number of years that a worker will be employed at the PSC site. In addition, PSC workers are primarily involved with the bulk loading of chemicals in areas that are away from the highest groundwater contamination. The most affected groundwater is present in the equipment storage yard located just east of the tank farm where no buildings or operational areas are present. As such, vapors emanating from shallow groundwater in this area would be released outdoors and diluted in the atmosphere. Groundwater concentrations of VOCs decrease approximately 1,000-fold within a short distance east (approximately 150 feet) of the most affected wells.

Considering this information, the measure of conservatism inherent in the risk assessment process and applied in the ADEQ Human Health and Ecological Risk Assessment, and the planned future land use at both sites, the significant exposure pathways discussed above can be considered to be within acceptable limits.

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 *Parker Solvents Company, Inc.* facility, EPA ID # *Ard035565068*, located at *8909 Mabelvale Pike, Little Rock, AR* 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	*May 4, 2005*
	(print)	*Rachel Smith*		
	(title)	*Sr. Epidemiologist, HWD, ADEQ*		

Supervisor	(signature)		Date	*May 4, 2005*
	(print)	*Daniel Clanton*		
	(title)	*Engineer Supervisor, HWD, ADEQ*		
	(EPA Region or State)	*Arkansas*		

Locations where References may be found:
Arkansas Department of Environmental Quality (ADEQ) *Central File Room* *State Police Headquarters* *#1 State Police Plaza* *Little Rock, AR 72219* *(501) 682-0744*

Contact telephone and e-mail numbers

(name)	*Daniel Clanton*
(phone #)	*501-682-0834*
(e-mail)	*clanton@adeq.state.ar.us*

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.

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Completed by (signature) Rachel Smith Date *May 4, 2005*
(print) *Rachel Smith*
(title) *Sr. Epidemiologist, HWD, ADEQ*

Supervisor (signature) Daniel Clanton Date *May 4, 2005*
(print) *Daniel Clanton*
(title) *Engineer Supervisor, HWD, ADEQ*
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