

## **Shell Chemicals Yabucoa Incorporated**

EPA ID Number: PRD090074071

### **Other (Former) Names of Site**

Puerto Rico Sun Oil Company (1971-2001)

### **Site Description**

The Shell Chemicals Yabucoa Inc. (formerly Puerto Rico Sun Oil Company) is located on Road 901 about two miles east of the town of Yabucoa, Puerto Rico. Petroleum refining operations have been in progress at the site since May 1971.

The facility occupies approximately 252 acres that have been subdivided into three working areas: the Refinery Area, the Tank Farm Area, and the Dock Area. The Refinery Area is the most inland area of the facility, bordered on the east by Lajas Creek and on the north by Santiago Creek. The Tank Farm Area is located approximately 2,300 feet east of the Refinery Area, and is bordered by two unnamed creeks. The Dock Area extends east of the Tank Farm Area, terminating at the Caribbean Sea. The Dock Area encloses a small man-made inlet from the Caribbean Sea which is used by tanker ships for loading and unloading purposes.

Agricultural and sugar cane field surround the facility to the north, east, and west. To the south, Route 901 borders the Refinery Area, sugar cane fields border the Tank Farm Area, and a palm tree grove and beach border the Dock Area. The residential community of Camino Nuevo, with a population of 4,900 persons, is located approximately 2,500 feet southeast of the Refinery Area.

### **Site Responsibility and Legal Instrument**

In June 1994, EPA Region 2 and Puerto Rico Sun Oil Company (PRSOC) entered into a Resource Conservation and Recovery Act (RCRA) §3008 (h) Corrective Action Order. The Order required PRSOC to investigate seventeen Solid Waste Management Units (SWMUs) across the site. The subject SWMU's are listed in the tables below.

<b>Refinery Area SWMUs</b>		
Final Retention Basin (SWMU 14)	North Aeration Basin (SWMU 17)	South Aeration Basin (SWMU 18)
Process Sewer (SWMU 32)	Slop Oil Tank 103 (SWMU 35)	Air Flotation Unit (SWMU 36)

Dewatering Chamber (SWMU 38)	Hazardous Waste Mixing Box (SWMU 39)	Northeast Refinery Area (SWMU 40)
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Tank Farm Area SWMUs		
West API Separator (SWMU 2)	East API Separator (SWMU 3)	Watery Oil Separator (SWMU 43)
Ballast Basin (SWMU 44) skimmer area only	Ballast Basin Leachate Collection Tank (SWMU 44A)	East Aisle Ditch (SWMU 45)

Dock Area SWMUs	
Main Dock Sump (SWMU 33)	Barge Dock Sump (SWMU 34)

## Permit Status

Shell Chemicals Yabucoa, Inc. currently operates under interim status, but is in the process of seeking a Resource Conservation and Recovery Act (RCRA) Part B permit application for operation and upgrade of the Hazardous Waste Storage Area (HWSA). The only other regulated units at the site — the Equalization Basin (EQB) and the New Oily Sludge Basin — clean closed under interim status in 2002. The facility also maintains a National Pollutant Discharge Elimination system (NPDES) Permit for discharge of stormwater and treated wastewater into area surface waters, including the Caribbean Sea and Santiago Creek. Wastewater treatment units at the site are excluded from RCRA regulation under 40 CFR §264.1(g)(6).

## Potential Threats and Contaminants

Shell Chemicals Yabucoa is presently completing a multi-year RCRA Facility Investigation (RFI) at the site, including soil and groundwater investigation at fifteen Solid Waste Management Units (SWMUs). No Further Action (NFA) appears to be necessary for two SWMUs. The two SWMUs are the Process Sewer (32) and the Ballast Basin Leachate Collection Tank (44A). The primary hazardous and non-hazardous wastes currently generated at this facility are from refining operations. Most of the RCRA hazardous waste generated by the facility is oily sludge, falling under waste codes K051, K049, F037, and F038. Other hazardous wastes generated at the site include K048, K050, K169, K171, K172, D001, D018, and U154.

Operations at the site have contaminated both soil and groundwater. Organic contaminants found in soil at the site included chrysene, toluene, ethylbenzene, xylene, carbon disulfide, and polyaromatic hydrocarbons (PAHs). However, all of the detections in surface soil and most of the detections in subsurface soil were reported below relevant risk-based concentrations (RBCs) or other appropriate screening levels. Groundwater beneath the site has been impacted in isolated areas by benzene, naphthalene, vinyl chloride, and arsenic.

Light nonaqueous phase liquid (LNAPL) consisting of free product hydrocarbon (FPH) was observed at the East API Separator (SWMU 3), the Watery Oil Separator (SWMU 43), the Main Dock Sump (SWMU 33), the Barge Dock Sump (SWMU 34), and the Northeast Refinery Area (SWMU 40). FPH was also observed in soil at the Northeast Refinery Area and in sections of the East Aisle Ditch (SWMU 45).

## **Cleanup Approach and Progress**

As required by the Corrective Action Order, Shell Chemicals Yabucoa is investigating releases from the identified Solid Waste Management Units (SWMUs) during the multi-year RCRA Facility Investigation (RFI) effort (including the supplemental RFI conducted in 2003). Based upon the preliminary results of these investigations, it appears that hazardous waste constituents have been released to the soil and groundwater at the site, resulting in contamination of both media at levels exceeding applicable risk-based standards. However, a preliminary exposure assessment (included in the June 1997 RFI Report) indicates that potential impacts to human health and the environment from exposure to soil or groundwater contamination at the site is insignificant.

In the draft RFI Report, Puerto Rico Sun Oil Company recommended no further action for several of the SWMUs, including the Process Sewer (SWMU 32) and the Ballast Basin Leachate Collection Tank (SWMU 44A). Additional risk assessment documentation and No Further Action (NFA) recommendations will be provided in the revised RFI Report yet to be submitted by the facility.

- **Soils**

As discussed previously, soil investigations have been conducted across the site in conjunction with RFI activity and in response to accidental releases. Based on preliminary results of the RFI effort, large-scale soil remediation does not appear to be necessary at this facility. However, approximately 51 cubic yards of soil and concrete were removed from the Crude Naphtha Debutanizer Area in 2001 after investigation of SWMU 32 identified this area of free product hydrocarbon contamination. Confirmation samples indicated no residual contamination above risk-based screening levels.

In addition, soil quality investigations have been completed at the Dissolved Air Flotation Unit (SWMU 36) to evaluate potential adverse impacts from accidental releases of hazardous waste. Contaminated soil and crushed stone has been removed from SWMU 36. No residual impacts remain at this unit above EPA ingestion and groundwater protection soil screening levels or Toxicity Characteristic Leaching Procedure (TCLP) regulatory levels.

- **Groundwater**

Interim measures have been implemented at six areas (SWMUs 3, 33, 34, 40, 43, and 45) to remove free product from affected wells via pumping or manual bailing and to monitor resultant changes in free product hydrocarbon (FPH) thickness.

Final corrective measures have not yet been evaluated or selected. To fully delineate groundwater impacts and close remaining data gaps associated with the RCRA Facility Investigation (RFI) and Supplemental RFI, Shell Chemicals plans to install and sample an additional well downgradient of well MDS-5 at the Main Dock Sump (SWMU 33).

It is anticipated that this follow-on investigation will be completed within the 2004 field season as part of RFI, post-RFI, or Corrective Measures Study (CMS) activities. In addition, Shell Chemicals will evaluate the need for ongoing groundwater monitoring at the Watery Oil Separator (SWMU 43) and the Barge Dock Sump (SWMU 34) during the CMS process. Finally, the RFI will be revised and finalized as directed in various comments and letters on the RFI and Supplemental RFI.

### **Site Repository**

Copies of supporting technical documents and correspondence are available for public review at the following locations:

U.S. Environmental Protection Agency, Region 2  
RCRA Records Center  
290 Broadway, 15th Floor, Room 1538  
New York, New York 10007-1866  
Telephone (212) 637-3043

Puerto Rico Environmental Quality Board (PREQB)  
Ponce De Leon Avenue  
National Plaza Bldg., 12<sup>th</sup> Floor  
Hato Rey, Puerto Rico 00917