STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 4618

Union Carbide Caribe, Inc.

Ponce, PR

(Signed September 29, 1988)

Facility/Unit Type: Former petrochemical producer
Contaminants: VOCs
Media: Ground water
Remedy: Solidification/stabilization with on-site landfilling, ground-water recovery

FACILITY DESCRIPTION

In September 1988, EPA issued a RCRA permit to Union Carbide Caribe, Inc. (UCCI) for closure and operation of on-site facilities necessary to support closure and remedial action. Two aeration lagoons associated with the waste water treatment plant (WWTP) and the industrial landfill were permitted. These units are used in support of the closure of the other units and remedial activities. The 32 SMWUs identified in the RFA were included in the 1988 permit. The SWMUs were divided into four groups (Group I, II, III, and IV). This Statement of Basis pertains only to Group I units, which include the North Cooling Water Return Lateral, the dripolene pond, the Industrial Landfill, and the Stormwater Control Pond. The Group I units are adjacent to each other and share the same critical remedial action issues.

The UCCI facility is a 944-acre petrochemical complex located in a semi-rural, industrial area. The facility consists of two principle locations, the Main Plant (Tallaboa Poniente) and the Puntilla. The facility produced olefins such as ethylene, propylene, acetylene, butanols, acetylene black, and bisphenol. UCCI permanently ceased production operations in 1985 and engaged in activities including chemical products distribution and wholesaling, and the operation of its WWTP.

The major hazardous wastes generated in the past consisted of residues from operating units and wastes derived from maintenance-related cleaning of equipment. Most of the waste was utilized as fuel to the boilers. Wastes with poor fuel value were burned in ground burners or sent to primary solid ponds and the WWTP.

Ground water occurs in alluvium under unconfined conditions. The groundwater is nonpotable due to its brackishness. Depth to the ground-water table ranges from three to six feet below ground surface and the direction of flow is generally to the southwest. The Tallaboa Bay is directly south of the plant and received cooling water discharges during plant operation.

UCCI has been investigating ground-water contamination since 1977. The permit formalized

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Average Concentration (ppm)	Action Level (ppm)	Cleanup Goal (ppm)	Point of Compliance***
ground water	not given	Benzene	25	10.000	10.000*	R-1, R-2, R-3, R-6, R-7 and R-8
		Ethylbenzene	100	4.700	4.700	
		Toluene	6.8	10.000	10.000*	
		Naphthalene**	5.2	5.000	5.000	
		Fluoranthene	3.6	0.060	0.060	
		Benzo(a)-anthracene	2.1	0.0350	0.035†	
		Chrysene	2.1	0.100	0.100†	
		Fluorene	3.5	0.120	0.120*	
		Phenanthrene	4.0	0.140	0.140*	
		Acenaphthene	1.80	0.065	0.065*	
		Acenaphthylene	3.00	1.200	1.200*	
		Acetophenone	0.300	0.065	0.065*	
		Pyrene**	19.0	0.022	0.022	
		Styrene**	5.80		†	
		Xylene**	3.90	1.380	1.380	
		4-Nitrophenol**	@		†	
		Anthracene**	10.0	0.280	0.028	
		2-Methyl-naphthalene**	39.0	0.546	0.546	

* Indicates an Alternate Concentration Limit.
** Added Parameters as a Result of Appendix IX Sampling.
*** The compliance point is the edge of the corrective action management unit, which includes a regulated and nonregulated units.
† Indicates Practical Quantifiable Limit.
@ Included in Sampling but not detected.

the investigations performed and ensured that cleanup would be conducted according to regulations. On February 1, 1989, UCCI submitted a CMS and Implementation Report for the Group I SWMUs.

EXPOSURE PATHWAYS

The exposure potential was evaluated for ground water and air emissions. There are no known users of ground water in the industrial complex in which the plant is located. EPA determined that personnel directly involved in remediation possibly could be exposed to elevated levels of contaminants. To address potential exposure, a site health and safety program was implemented, requiring appropriate respiratory and clothing protection.

SELECTED REMEDY

The selected remedy for final disposal of impounded waste is solidification/stabilization and on-site landfilling in the Industrial Landfill. An EPA-approved cover system consisting of a two-foot thick clay barrier and two-foot thick top soil layer will be installed on the landfill material. Subsurface remediation will be achieved with a recovery well system.

The selection of this remedy was supported by laboratory and field testing, which demonstrated that solidification/stabilization would be effective in minimizing leaching of hazardous constituents and that the Industrial Landfill was capable of accepting

the anticipated volume of stabilized waste and contaminated soil. The recovery well system was selected because it will remove contamination and prevent further migration. The remedy uses proven technologies and protects human health and the environment.

The total capital costs associated with the selected remedy is $15.8 million. Stabilization/ solidification and landfilling are projected to be completed in 1.5 to 5 years, while the recovery well system will be completed during the life of permit (30 years).

INNOVATIVE TECHNOLOGIES CONSIDERED

Innovative technologies that were considered, but not included in the selected remedy, were liquid and solid phase biological oxidation, conversion to liquid fuel via extractive distillation, and in-situ stabilization and closure.

PUBLIC PARTICIPATION

EPA established a 45-day public comment period which began on June 17, 1988 and ended on August 3, 1988. A public hearing was conducted on August 3, 1988 to allow the public to address questions and raise concerns. The major comment raised during the public comment period was an objection to one of the alternatives considered for the site cleanup. This alternative involves installing an on-site hazardous waste incinerator to burn the waste generated during the closure and cleanup. This alternative was not selected.

NEXT STEPS

EPA will continue to monitor the ground water recovery system to ensure adequate control and the effectiveness of the ground-water recovery system. Due to the extent of ground-water contamination, the specified clean-up standard may not be achieved for several years. The effectiveness of the contaminant migration control is currently under evaluation and will continue to be monitored. If it is demonstrated that contaminant migration control is ineffective, i.e., incapable of achieving a steady or decreasing concentration of contaminant in the ground water, then alternative technologies will be considered and the permit will be modified to implement the alternative.

KEY WORDS
ground water; ingestion, inhalation, dermal contact; VOCs; stabilization, landfilling, on-site disposal

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