STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY	REGION VII ID # 2836 IAD 045 372 836

Quantum Chemical Company
Clinton, Iowa
(Signed September 29, 1994)

Facility/Unit Type: Polyethylene manufacturer
Contaminants: VOCs, PAHs, CPAHs
Media: Groundwater, Soil
Remedy: Cap contaminated areas, install run-on and run-off controls, modify the wastewater treatment system, contain contaminated groundwater on-site, treat extracted groundwater on-site, and monitor groundwater

FACILITY DESCRIPTION

Remedial action at the Quantum facility is being implemented through a series of actions taken by EPA pursuant to the Comprehensive Environmental Release, Compensation and Liability Act (CERCLA), RCRA §3008(h) for investigations and studies during interim status, and RCRA Section §3004(u) for remedy selection and implementation in the final permit. EPA completed a RCRA Facility Assessment (RFA) in December 1989 and identified 21 solid waste management units (SWMUs) and areas of concern (AOCs) at the facility. Under CERCLA, releases of hazardous substances are being addressed by two operable unit (OU) activities. The fir· · OU addresses groundwater, and the second addresses soil and waste in 11 of the 21 SWMUs. Under RCRA Section §3004(u), Quantum's final RCRA hazardous waste management permit will remediate contaminated soil and wastes in the ten SWMUs not addressed under CERCLA.

EPA required that a Corrective Measures Study (CMS) be conducted on the area north of the bulk oil tanks, including the "Cold Lime Ponds" (a part of the wastewater treatment system) and the combined areas of the current wastepile and a former landfarm. The CMS determined that volatile organic compounds (VOCs), including benzene, toluene, and ethyl benzene, occur in the groundwater at elevated levels, and that polynuclear aromatic hydrocarbons (PAHs), including carcinogenic PAHs (CPAHs), occur at high concentrations in the soil.

Specifically, benzene was detected in the overburden and bedrock groundwater at the site. In the overburden, benzene has been detected at: 1) the former landfill area; 2) just east of the former landfill area; 3) the southwest corner of the plant [debutanized aromatic concentrate (DAC) tank area, polishing basin area]; and 4) the south-central portion of the plant (railcar loading area). The distribution of benzene in the southern portion of the site trends to the south-southwest, following groundwater flow. The groundwater in the bedrock along the western side of the plant (under the landfill area) also showed the presence of benzene. This distribution of benzene in the bedrock groundwater extends into the DAC spill area and polishing basin area, is more widespread, and at higher concentrations than the benzene distribution in the overburden groundwater.

PCE is present in the overburden in an area extending from the southwest corner of the ethylene production area to west of the former landfill, and just north of the ethylene tank. In the bedrock groundwater, the distribution of PCE is more widespread than in the overburden and encompasses much of the site.

PCE concentrations in groundwater greater than one percent of the solubility in water (greater than 1,500 $\mu g/L$) may indicate the presence of dense nonaqueous phase liquids (DNAPL). One such potential DNAPL area is in the overburden south of the fire training area. In bedrock, DNAPL is suspected along the western edge of the site (extending from the southwest corner of the ethylene production area, southwest across the former landfill, to just east of the DAC spill area) and in the

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	MCL Action Level (ppb)	MCL Cleanup Goal (ppb)	Point of Compliance
soil and groundwater	Not given	VOC Benzene Total PAHs Total CPAHs	5 3200 20	Not given	Not given	Not given

*NA = Not Applicable

southeast portion of the site possibly emanating from the production area.

PAH compounds were detected in groundwater in both the overburden and the bedrock. Three primary PAH-affected areas are the former landfill, south area (DAC storage/truck loading area), and the polishing basin. Light nonaqueous phase liquid (LNAPL) has been found in monitoring wells in and around the landfill area, the DAC loading area, and south of the polishing basin.

The Quantum facility is located approximately 1.5 miles northwest of Camanche, Iowa and 5.5 miles west of Clinton, Iowa in Clinton County, Iowa, and has been in operation since 1967. The approximately 630-acre facility includes the high-density and low-density polyethylene manufacturing plant operated by Quantum as well as surrounding agricultural fields. The plant itself is located on 237 acres of land enclosed by a security fence. It consists of several production areas, a wastewater treatment plant, a former landfill area, and various chemical and product storage tanks and loading areas. An anhydrous ammonia plant, owned by the Arcadian Corporation, is located to the southeast, adjacent to the Quantum facility.

The plant and the land on which it is located are owned by the City of Clinton. Initially, the City leased the land to ACC Chemical Company and Getty Chemical Company (GCC), which operated the plant until 1984. Quantum currently leases the plant and the property from the City, excluding a seven-acre landfill on the western portion of the facility. ACC/GCC retain their leasehold interest in that landfill.

Surface topography around the site is generally gradually sloping with several unlined rainwater retention ponds on the west side and manmade channels throughout the site to accommodate surface drainage. There are two small tributaries to the east and the west of the plant, where the surface topography is steepest. The west tributary carries most of the surface drainage away from the plant, although surface runoff from the northeast and some of the eastern areas of the plant drain into the east tributary. Southwest of the plant is a low-lying area that floods during periods of moderate to heavy precipitation.

Groundwater at the site occurs in both the unconsolidated surface deposits and the underlying carbonate bedrock. The groundwater table is, for the most part, in the overburden and is typically found at depths between 2 and 10 feet below ground surface. Groundwater flow in the overburden is believed to be most pronounced within the local sand and gravel unit, southwest of the plant. In general, groundwater flows from the north to the south of the plant with increasing gradients in the southwest and southeast areas near the tributaries. The basal sand and gravel unit in the southwestern portion of the site, overlies highly weathered bedrock and seems to be a prominent flow path for groundwater and soluble groundwater-damaging compounds.

EXPOSURE PATHWAYS

The potential exposure pathways for the contaminated soil are via direct dermal exposure and indirect exposure through migration of contaminants into groundwater. The potential exposure pathways for contaminated groundwater are ingestion and dermal contact.

SELECTED REMEDY

The selected remedy integrates two CERCLA consent decrees (OU#1 for groundwater and OU#2 for soils) with additional actions taken as the result of the RFI and CMS completed pursuant to a RCRA §3008(h) consent order. The RCRA corrective measures are being implemented as part of the RCRA hazardous waste permit issued for a container storage unit.

The CERCLA OU#1 remedy contains contaminated groundwater on-site by installing a series of extraction wells at the perimeter of the facility. Extracted groundwater will be treated in an on-site wastewater treatment plant. Treated groundwater will be discharged under an existing National Pollutant Discharge Elimination System (NPDES) permit to the Mississippi River. The CERCLA OU#2 remedy includes Soil Vapor Extraction (SVE) at the former landfill, and capping and other access restrictions in other former land disposal units (i.e., landfarms and surface impoundments).

The RCRA Corrective Measures being implemented include the following:

- Cap the former landfarm, where sludge from the wastewater treatment plant was managed prior to its disposal off-site. The cap will prevent residual contaminants from being released as contaminated dirt/dust;

- Construct a berm around the sludge pile to prevent run-on and run-off of rainwater and/or liquids. This will prevent the release of contaminants to nearby surface waters; and

- Continue to modify and evaluate process changes to the wastewater treatment system in order to reduce the amount of hazardous constituents in the sludge.

The cost of the selected remedy is estimated at approximately $140,000 capital and $11,000 operations and maintenance (O&M).

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Remedy selection was part of the initial RCRA Permit for storage. A public comment period was held from August 8 to September 21, 1994. No comments were received.

NEXT STEPS

EPA will monitor the progress and effectiveness of the remedy by reviewing monitoring reports and conducting periodic on-site inspections of the remedial system.

KEYWORDS:
soil, groundwater; direct contact, dermal contact, ingestion; organic, VOCs, PAHs, CPAHs; capping, containment, extraction, monitoring, on-site treatment, on-site discharge

CONTACT:
Harriet Jones
U.S. EPA, Region VII
726 Minnesota Ave.
Kansas City, KS 66101