STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# (3144)

American Cyanamid Company

Bridgewater, NJ
(Signed November 1992)

Facility/Unit Type:	**Pharmaceutical manufacturing**
Contaminants:	**Acetone; Benzene; Ethylbenzene; Toluene; Chlorobenzene; Methylene Chloride; Total Xylenes; 1,2-Dichlorobenzene; 2-Methylnaphthalene; Naphthalene; 1,2,4-Trichlorobenzene; Arsenic; Cadmium; Chromium; Lead**
Media:	**Sediments, soils, surface water associated with impoundments**
Remedy:	**Solidification and excavation of impoundment wastes, on-site consolidation into a RCRA-permitted impoundment**

FACILITY DESCRIPTION

In May 1988, the New Jersey Department of Environmental Protection and Energy (NJDEPE) and American Cyanamid Company (Cyanamid) entered into an Administrative Consent Order (ACO) pursuant to Section 3008(h) of RCRA. Under the order, Cyanamid is required to address 16 on-site impoundments, contaminated soils, and ground water at their Bound Brook facility. Surface impoundments and contaminated soils are the primary focus of remedial investigations and the main source of ground-water contamination.

Cyanamid's 575-acre Bound Brook facility has been in operation for 75 years manufacturing rubber chemicals, pharmaceuticals, dyes, pigments, chemical intermediates, and petroleum-based products. Currently, Cyanamid manufactures pharmaceuticals.

In 1981, preliminary investigations verified that approximately one-half of the facility never supported manufacturing, waste storage, or waste disposal activities. Contamination sources are confined to the main plant area and on-site waste storage impoundments. Of the 27 on-site impoundments, 16 were contributing to ground-water contamination. The remaining 11 impoundments have been closed with NJDEPE approval or are being closed under RCRA closure procedures.

In December 1982, the entire Cyanamid facility was placed on the NPL. A New Jersey Pollutant Discharge Elimination System Permit was issued, which requires Cyanamid to conduct extensive ground-water monitoring and to continue pumping bedrock production wells to contain the ground-water contamination on site. EPA issued a HSWA permit in December in conjunction with an operating permit issued by NJDEPE, which constitute the RCRA permit for the facility.

There are two ground-water aquifer systems which underlie the site: a shallow overburden aquifer system that flows south towards the Raritan River and a deeper, semi-confined bedrock aquifer system that flows north towards ground-water pumping wells. Ground water that is not captured by the NJPDES pumping system flows into the Raritan River. A study concluded that contamination from the Cyanamid facility did not effect the Raritan River or Cuckolds Brook.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Range of Concentration	Action Level	Cleanup Goal	Point of Compliance
sediments, soils, and surface water	181,800 cubic yards	Total VOCs	1 to 5,500 ppm			
		Acetone				
		Benzene				
		Ethylbenzene				
		Toluene				
		Chlorobenzene				
		Methylene Chloride				
		Total Xylenes				
		Total Semi-VOCs	95 to 10,000 ppm			
		1,2-Dichlorobenzene				
		2-Methylnaphthalene				
		Naphthalene				
		1,2,4-Trichlorobenzene				
		Acenaphthalene				
		Benzo(a)Anthracene				
		Flourene				
		Total Inorganics	1 to 301,000 ppm			
		Arsenic				
		Cadmium				
		Chromium				
		Lead				
		Copper				
		Mercury				
		Nickel				
		Zinc				
		Calcium				
		Iron				
		Magnesium				

EXPOSURE PATHWAYS

Exposure to contaminated ground water was not identified as a potential exposure pathway because Cyanamid is pumping 650,000 gallons of contaminated ground water per day, which effectively contains the contamination on site. A baseline exposure assessment evaluated potential exposure scenarios and identified the following significant pathways: (1) ingestion, dermal contact, or inhalation of contaminated soil particulates; (2) ingestion, dermal contact, or inhalation of particulates associated with impoundment solids; and, (3) inhalation of organic vapors form water cover of impoundment waste. However, the impoundments are a continuous source of ground-water contamination which could present a threat to human health and the environment, if not controlled by in-place remediation efforts.

SELECTED REMEDY

Due to practical limitations, the 16 impoundments cannot be remediated concurrently. Therefore, the impoundments have been divided into three groups according to waste type, nature of contamination, and geographic location on the site. The Statement of Basis only addresses corrective action for Group I impoundments, which contain sludges from on-site waste-water

treatment operations and chemical constituents. The selected remedy for Group I impoundments consists of excavating the contents of the impoundments, treating the waste materials through solidification, and consolidating the treated waste into Impoundment 8, an on-site RCRA-permitted impoundment. Solidification will chemically bind the inorganic constituents into a matrix preventing migration and indirectly reducing the toxicity of the sludge. Impoundment 8 is triple-lined and has a leachate detection/collection system and a ground water monitoring system. Measures will be taken to promote the natural vegetation of each impoundment. Volatile emissions will be collected and treated by carbon absorption, if necessary.

The selected remedy will achieve greater overall protection of human health and the environment by eliminating exposure pathways through removal, treatment and consolidation of the contaminated source material. Solidification provides equal protection of public health and the environment in a shorter time frame at significantly less cost. The total cost for the selected remedy is $13,600,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

Biological treatment was considered for treatment of Group I, but could not be initiated due to the inordinate amount of equalization and dilution required to initiate biotreatment. Thermal treatment was considered for one impoundment in Group I, but the predominantly inorganic makeup of the impoundment made thermal treatment impractical.

PUBLIC PARTICIPATION

NJDEPE and EPA plan to conduct public participation activities, including establishing a public comment period and holding a public meeting to respond to community concerns about the corrective action taken at the site.

NEXT STEPS

Due to the complex nature of contamination at the site, the operable unit approach was adopted to allow for the development of more efficient, timely, and complete remediation programs by dividing the cleanup into discrete, more manageable units. Plans for the remaining two impoundment groups will be submitted later. These actions will be followed by remedial studies addressing the soils and ground water at the site.

KEY WORDS
sediments, soils, surface water; ingestion, dermal contact, inhalation; VOCs, Semi-VOCs, Inorganics; solidification, excavation, on-site consolidation

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