STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 6711

Allied Signal Inc. Baltimore Works Facility

Baltimore, MD
April 21, 1991

Facility/Unit Type:	**Chromium chemical manufacturing facility**
Contaminants:	**Chromium; Polynuclear Aromatic Hydrocarbons (PAHs)**
Media:	**Surface soil; ground water, and surface water**
Remedy:	**Hydraulic barrier, ground-water maintenance system, multimedia cap, outboard embankment; monitoring for ground water, surface water, sediment, benthic organisms, and air at the Former Manufacturing Area; layered soil cap at the Southeast Quadrant; clearing and resampling at the off-site areas; excavation and proper disposal at Wills Street**

FACILITY DESCRIPTION

On September 29, 1989, EPA, the State of Maryland Department of the Environment (MDE) and Allied-Signal Inc. Baltimore Works Facility (Allied) entered into a Consent Decree pursuant to Sections 3008(h) and 7003 of RCRA. Under the terms of this Consent Decree, Allied was required to investigate the nature and extent of contamination at the facility, to submit reports on these investigations, and submit a Corrective Measures Implementation Program Plan (CMIPP).

Allied is a 20-acre facility that manufactured chromium chemicals for approximately 140 years under successive ownership. Operations ceased in 1985.

The surrounding land use includes industrial, residential, and commercial districts in the vicinity. The site is located between Baltimore's downtown business district and the Fells Point section of the city. The facility is surrounded by water to the east, west, and south. This body of water is used for recreational and commercial boating traffic to and from Baltimore's Inner Harbor.

Contamination has been identified in four areas at the facility: the former manufacturing area, the southeast quadrant of the facility, neighboring contiguous properties, and neighboring non-contiguous properties. Elevated levels of chromium and PAHs have been detected in soils both on- and off-site.

The shallow aquifer (0-20 feet below the ground surface) and deep aquifer (23-70 feet below ground surface) are contaminated with chromium, with the highest concentrations near the former manufacturing area. Chromium in the deep aquifer has migrated approximately 2,750 feet off-site along the top of the bedrock. EPA has not identified any users of the deep aquifer for drinking water.

EXPOSURE PATHWAYS

EPA and MDE have identified exposure pathways through inhalation, dermal contact, and ingestion of the contaminated soil and surface water in the four areas of the corrective action. The nearest current human receptors are employees of neighboring industrial facilities, persons who reside near the facility, and persons who fish off the docks adjacent to the facility.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
ground water					
shallow	chromium	14,500 mg/l[1]	*		Barrier wall and bedrock
deep (on-site)	chromium	8,000 mg/l			
deep (off-site)	chromium	1,600 mg/l[2]			
surface water	chromium (total)	3170 ppb		50 ppb	Outside barrier wall[3]
soil	hexavalent chromium	94 mg/kg	10 ppm	10.0 ppm	SE Quadrant Neighboring properties
	benzo(A)anthracene	16 mg/kg	0.8 ppm	0.8 ppm	
	benzoflouranthenes	29 mg/kg	1.8 ppm	1.8 ppm	
	indeno-(1,2,-CD)-pyrene	11 mg/kg	0.5 ppm	0.5 ppm	

1 Detected in shallow ground water beneath the Former Manufacturing Area
2 Detected in the deep aquifer under Patapsco River.
3 Must meet EPA marine water quality standards for 4 consecutive days per month.

* The action level for ground water is to maintain an inward hydraulic gradient of 0.01 foot from the outside to the inside of the containment structure.

SELECTED REMEDY

The table below summarizes the selected remedies for each area of concern at the facility.

Facility Area	Media	Remedy Description
Former Manufacturing Area	soil ground water surface water	Install a deep hydraulic barrier to minimize the quantity of water withdrawn to maintain the inward hydraulic gradient and to minimize direct contact of contaminated soils and ground water with surface water. Construct an enhanced bulkhead (outboard embankment) and the area to prevent the collapse of chromium-contaminated soil into the harbor. Install a ground-water withdrawal system to prevent migration beyond the containment structure by maintaining an inward hydraulic gradient. Perpetual surface- and ground-water monitoring surrounding the containment structure.

Facility Area	Media	Remedy Description
Former Manufacturing Area (cont'd)	soil ground water surface water	Install a multi-media cap to prevent future exposure to the contaminated soil and to reduce leachate.
Southeast Quadrant	soil	Place a layered soil cap to prevent upward migration of the remaining chromium and PAHs in the soil and potential exposure to the chromium.
Offsite areas to the east of the facility, neighboring non-contiguous properties	soil	Areas will be cleared and resampled. If resampling reveals that soil exceeds the PAH action levels, they will be covered with 2 feet of clean soil; concentration of chromium reduced to 10 ppm in unsaturated soils.
Neighboring contiguous properties	soil	Excavation of saturated and unsaturated chromium-contaminated soil and proper disposal

Contaminated soils which could leach unacceptable levels of chromium have been removed from the Southeast Quadrant and disposed of at an appropriate off-site landfill. Extracted ground water will either be treated on-site and discharged into the harbor or the City's public treatment works, or it will be removed and transported by tanker truck to an off-site disposal facility.

The corrective measures are expected to minimize the future release of contaminants into the air, surface soil, ground water, and surface water. Surface water will be monitored to ensure that concentrations of chromium do not exceed the 50 ppb standard established in the consent decree. In addition, ground-water quality monitoring and biological and sediment sampling will be conducted. EPA and MDE believe that these corrective measures will offer a final remedy to the contamination.

The total cost of the corrective action is estimated to be approximately $97 million.

As a result of the salinity of the ground water underlying the facility, the State of Maryland has determined that the ground water is not a drinking water source. Therefore, no cleanup goal has been established for the ground water.

PUBLIC PARTICIPATION

EPA and MDE invited public comment of the corrective measures from August 26, 1991 to September 16, 1991 and from September 18, 1991 through November 12, 1991. A public meeting was held on October 28, 1991. EPA and MDE also conducted several interviews with interested local officials, residents, and business owners in the community. The Agencies received 120 comments from the general public, the State of New Jersey, the City of Baltimore, and Allied. The comments on the Statement of Basis are summarized below:

- The State of New Jersey questioned the implementability and effectiveness of the hydraulic barrier and expressed concern regarding the risk assessment.

- The City of Baltimore expressed concern about the future use of the site, and risks created during the remedy implementation. City officials asked that Allied submit copies of all documents to the City.

- Comments from the general public focused on off-site contamination, the frequency of off-site monitoring, health effects caused by exposure to chromium, and future land use.

NEXT STEPS

Design approval and implementation.

KEY WORDS

ground water, surface water, soil; ingestion, dermal contact, inhalation; PAHs, chromium; capping, hydraulic containment, monitoring

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