STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IV
ID # FL 5673

Air Products and Chemicals, Inc.

Pace, Florida
August 23, 1994

Facility/Unit Type:	**Chemical Manufacturing**
Contaminants:	**2,4-dinitrotoluene (DNT), 2,6-DNT**
Media:	**Ground water, soil**
Remedy:	**Treat ground water using carbon adsorption and reinjection; treat soil using bioremediation, soil flushing, capping, and institutional controls**

FACILITY DESCRIPTION

On September 29, 1989, Air Products and Chemicals, Inc. (APCI) was issued a corrective action order pursuant to RCRA§3008(h) to complete a RCRA Facility Investigation (RFI) to determine the nature and extent of any on- or offsite contamination from its Pace, Florida facility.

The 1,450-acre APCI site is an active chemical manufacturing facility located in Pace, Santa Rosa County, Florida. The site has been used since the early 1960's for the manufacture of approximately 40 different products including alkyl amines, ammonia, menthol, nitric acid, and ammonium nitrate fertilizer. The alkyl amines are sold to companies which convert them to water treatment chemicals, pharmaceuticals, pesticides, and other products. The other materials produced by APCI are sold to companies for use as feedstocks to make additional products. The plant was originally owned and operated by Escambia Chemical Company, and was purchased in April, 1969 by APCI.

Operations at the facility are grouped into two areas approximately one mile apart. The complex of plants to the north is known as Plant Area A and those to the south are known as Plant Area B. Dinitrotoluene (DNT) was produced by reacting toluene with a mixture of nitric and sulfuric acids at Plant Area B from 1966 until 1973 when the DNT plan was closed. The soil contamination in Plant Area B is divided into two areas. In the DNT Treatment Area, process equipment washdown and wastewater from the DNT production operation was discharged into the Delta Pond. DNT solids were also burned in this area when the Delta Pond was drained at the time of the DNT Plant's closure. The second area, the Area B Solids Disposal Area, is comprised of two solid waste disposal areas used primarily for the disposal of construction debris, manufacturing equipment, and janitorial wastes. DNT solids were also burned in these areas.

The site is bordered on the southwest by Escambia Bay, on the south by Cytec Industries, Inc., and on the east, north, and west by the lightly settled residential areas of Floridatown and Pace. The APCI is composed of heavily wooded and wetlands areas. A portion of the site has been designated as a bird sanctuary. The land to the west of Area B and to the East of Floridatown is composed largely of wetlands. There are no local downgradient ground-water wells currently being utilized for potable purposes within a one-mile radius of the facility. Drinking water for APCI and Cytec as well as the residents in the surrounding Pace community is supplied by the Pace Water Supply. Each of the Pace Water Supply wells is located more than one mile hydraulically upgradient of the APCI facility. APCI and Cytec use ground-water wells drilled into the aquifers below the site for supplying process water to each of their facilities.

Ground water in the area surrounding the APCI site is found within three aquifers: the Sand-and-Gravel Aquifer, the upper limestone of the Floridian Aquifer, and the lower limestone of the Floridian Aquifer. The soft and relatively unmineralized

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (μg/l)	Action Level (μg/l)	Cleanup Goal	Point of Compliance
Ground water	Not given	2,4-dinitrotoluene (DNT) 2,6-DNT	Not given	Not given	0.1 μg/l 0.2 μg/l	On-site wells
Soil	5,500 cubic yards	2,4-DNT 2,6-DNT	Not given	Not given	2.34 mg/kg 2.34 mg/kg	*

- Cleanup levels must be achieved at any point where direct contact exposure to the soils may occur and at any other points necessary to protect against unacceptable cross media transfer.

water in the Sand-and-Gravel Aquifer is the primary source of drinking water in the area. The aquifer consists of permeable sand, some gravel layers, and discontinuous clay lenses. It extends from the water table to depths of 200 to 1,000 feet below ground surface. Water may occur either under water table conditions or semi-confined by layers or lenses of clay. Recharge to the aquifer is by local rainfall.

The highest point at the facility is approximately 130 feet above sea level. Surface elevations generally decrease moving southwest towards Escambia Bay. Dridgler's Creek lies to the west of the facility. In addition, active wastewater ponds in Plant Area B such as Bio-pond Charlie, Bio-pond Hotel, and Bio-pond Bravo comprise the onsite surface water bodies. Both Dridgler's Creek and the wastewater ponds drain into Escambia Bay.

The RFI was conducted from 1989 through 1991. It concluded that DNT contamination exists in both the soil of the Area B Solids Disposal Areas and the Delta Pond Area, as well as the ground water beneath Plant Area B. Surficial soils within the DNT Treatment Area contain elevated amounts of DNT in the area surrounding the former Delta Pond and in isolated pockets to the east of the pond. Small amounts of unburned DNT have also been identified within 10 feet below the surface in thin lenses at the Area B Solids Disposal Areas. Ground water contamination exists within 400 acres of the Sand-and-Gravel Aquifer beneath Plant Area B at depths of up to 200 feet below sea level. The wastewater treatment plant for the facility was installed in Plant Area B. Neutralization (pH adjustment), equalization (flow and concentration adjustment), and biological treatment are performed on facility wastewaters in a series of treatment lagoons whose discharge to Escambia Bay is regulated by a National Pollutant Discharge Elimination System (NPDES) permit.

EXPOSURE PATHWAYS

Exposure pathways which could result in a risk from the DNT contamination include ground water, surface water, and soil. There is no current risk to humans from the contaminated ground water because there is no complete exposure pathway. However, without the use of deed restrictions and proper treatment of the DNT contamination that exists in the soil and ground water, a potential risk of exposure to humans exists in the future, should a drinking water well be drilled in an area of contamination.

SELECTED REMEDY

The selected remedial action for this site includes treating ground water in the west, southwest, and central south areas using activated carbon to remove organic contaminants by

adsorption; sending spent carbon offsite for regeneration and eventual reuse; treating DNT-contaminated soil in Plant Area B using bioremediation and soil flushing followed by consolidating soils over a double liner system and beneath a multi-media cap, and implementing institutional controls; and containing contaminated soil in the Plant Area B Solids Disposal Areas using a multi-media cap, soil cover, and institutional controls. The capital cost for the selected ground-water remedy is $721,364 with an annual operation and maintenance (O&M) cost of $156,902 for 30 years. The total capital cost for the two soil remedies is $6,875,000 with an annual O&M cost of $156,999. The total cost for the selected corrective measure is $17,014,004 over 30 years.

INNOVATIVE TECHNOLOGIES

Biological treatment (bioremediation), an innovative cleanup technology that uses bacteria to consume waste and break down organic materials, was considered for the remediation of DNT-contaminated ground water. Bioremediation was selected for the treatment of DNT-contaminated soil in Plant Area B.

PUBLIC PARTICIPATION

The public comment period was held from September 1, 1994 to October 17, 1994. No comments were received.

NEXT STEPS

The corrective measure alternatives selected by EPA will be implemented through a Corrective Measure Implementation Consent Order. EPA will review the progress of the Corrective Measure Implementation at the facility in three years and may determine that modifications to the soil flushing corrective measure system are necessary to achieve soil cleanup goals. Following this review, evaluations will be performed in conjunction with the required five-year reviews due to the containment of hazardous substances onsite.

KEY WORDS:
Groundwater, soil; VOCs; capping, carbon adsorption, innovative technology, bioremediation (considered (ground water), selected (soil)), reinjection, soil flushing

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