NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID & HAZARDOUS MATERIALS

STATEMENT OF BASIS

FOR

AKZO NOBEL POLYMER CHEMICALS LLC
2153 Lockport-Olcott Road
Burt, NY

August 26, 2005

FACILITY: AKZO NOBEL POLYMER CHEMICALS LLC
BURT, NEW YORK
NIAGARA COUNTY

USEPA ID No.:NYD043815158
NYSDEC Part 373 Permit No.:9-2928-00001/00003

Introduction

The purpose of this Statement of Basis is to provide an opportunity for the public to be informed of and to participate in the selection of a final remedy that will be protective of human health and the environment for soils and groundwater at the Akzo Nobel Polymer Chemicals (ANC) site, located at 2153 Lockport-Olcott Road in Burt, New York (see Figure 1). The site is 350 acres in size and 80 acres are fenced. The former production portion of the facility encompasses approximately 30 acres (see Figure 2). ANC ceased all manufacturing operation in the Spring of 2003 and the facility remains in operation as a warehouse and distribution center. Areas associated with ANC's operations include: buildings, hazardous waste container storage pads, inactive landfills, an inactive burning cage, a closed waste sulfuric acid storage tank, closed underground storage tank (UST) locations, a fire pond, and numerous structures associated with the wastewater treatment facility and process sewer. The site contains 37 Solid Waste Management Units (SWMUs) and 5 Areas of Concern (AOCs).

This document:

- Provides a brief overview of the site history and site investigations which were conducted at the facility;
- Identifies the proposed remedy and presents the basis for its selection;
- Describes the remedial goals that were considered;
- Solicits public review and comment on the proposed remedy and other plausible remedies; and
- Provides information on how the public can be involved in the remedy selection process.

The New York State Department of Environmental Conservation (NYSDEC or Department) has tentatively selected a proposed remedy. Changes to the proposed remedy, or the selection of an alternative remedy may be made if public comments or additional data indicate that such changes are warranted. The Department will select a final remedy for the facility after the public comment period has ended and the comments have been reviewed and considered.

This document summarizes information that can be found in greater detail at the document repositories identified below. The Department encourages the public to review the documents at the repositories to gain a more comprehensive understanding of the nature and extent of contamination that has occurred at the site, and the possible remedies to address that contamination.

Proposed Remedy

The Department has tentatively selected the remedy described below.

The proposed remedy includes:

- Institutional controls consisting of deed restrictions or covenants to restrict activities on the site;

- Monitored natural attenuation which includes a comprehensive groundwater monitoring program that will determine the long term effectiveness of natural attenuation. Evaluation of the performance objectives or achievement of groundwater standards will be performed on an annual basis to determine the effectiveness of the proposed remedy.

Facility Background

The 350 acre ANC plant site is located in a rural, agricultural setting outside the Hamlet of Burt, Niagara County, New York. Numerous orchards, as well as small residential sections, surround and abut the facility property. To the west of the Facility is Eighteen Mile Creek that flows to Lake Ontario located about 2 miles to the north. Located immediately to the north is the small Hamlet of Burt. The nearest residential homes are approximately 1500-2000 feet from the production area of the Facility. To the south and east the lands are agricultural.

ANC produced organic peroxides including benzoyl peroxide, methyl ethyl ketone peroxide, actyl acetone peroxide, 2,4-dichlorobenzoyl peroxide, and parachlorobenzoyl peroxide at the production facility that represents approximately 30 of the 350 acre size of the ANC site. In April 2003, all chemical production ceased. Since that time, most of the buildings on-site have been razed. The ANC site now serves as a warehouse and distribution center for their products.

ANC has a 6NYCRR 373 Permit which requires proper closure of the hazardous waste units subject to the Permit. ANC implemented a NYSDEC-approved closure plan in July 2004.

The permit also required that ANC perform a RCRA Facility Assessment (RFA) and RCRA Facility Investigation (RFI) to determine the nature and extent of contamination associated with the Facility. The RFA began in 1994 and identified 37 Solid waste management units (SWMUs) and 5 Areas of Concerns (AOCs). The RFI began in 1995 and was completed in 2002. The RFI determined that 31 SWMUs and the 5 AOCs required no further action. The remaining 10 SWMUs were subject to the Corrective Measures Study (CMS) or required sampling at closure.

Various remedial alternatives were examined in more detail in the Corrective Measures Study Report for ANC, dated May 2003. The NYSDEC has reviewed this report and is soliciting public comment on the tentative selection of a final remedy to address conditions at the ANC facility.

Facility Investigations

The RFI for ANC was initially documented in a April 1997 report along with several addendums to supplement the initial RFI. A RCRA Report Addendum (October 1998) and a Phase II RFI Report (December 2000) were completed to address Agency comments and data gaps. The RFI report was approved by the NYSDEC in a letter dated October 25, 2002. Two remaining SWMUs (the Equalization Basin and Building 2 Sump) were sampled in 2004 after shutdown of production at ANC.

Subsurface Conditions and Groundwater

The field investigations at ANC focused on assessing the SWMUs and identifying the subsurface conditions that would control contaminant migration. The investigations included soil vapor screening analysis at 470 locations, 247 groundwater screening samples, the installation of 15 groundwater wells, the installation of 3 piezometers, and numerous soil borings and soil samples across the site.

The investigations identified a number of subsurface units of varying thickness associated with the site. The unconsolidated sediments (overburden) varied across the site, but consisted primarily of silty sands, clays, and gravels with a thin layer of glacial till at the bedrock-overburden. The units are not necessarily continuous across the site. Abrupt changes in stratigraphy were observed at locations in close proximity to each other. Isolated lenses of clay and peat were also found in a few locations.

The most prevalent unit in the overburden was the silty sand unit, which is also typically the shallowest. Typically the observed stratigraphic order of these units was an upper unit that is a brown to reddish-brown silty sand overlying a stiff brown clayey silt. Beneath these two layers was a brown silty, sandy, and or clayey gravel.

The depth to bedrock varies across the site. The depth to bedrock in western areas of the site ranges from 13-16 feet below the surface, while a boring in the eastern area of the site showed the depth to bedrock is at 25 feet below the surface. The bedrock is the Queenston Shale which dips gently towards the south. The shale is predominantly shale with interbedded siltstone.

Two aquifers have been identified at the site. The first aquifer encountered, designated the Overburden Aquifer, represents a saturated unconfined system within the sediments/overburden above the bedrock. The second aquifer designated as the Bedrock Aquifer occurs within the upper weathered surface of the bedrock. The glacial till at the overburden-bedrock interface

appears to limit hydraulic communication between the Overburden and Bedrock Aquifers. Based upon measurements obtained in the field, overburden hydraulic conductivity is higher than the bedrock.

Groundwater flow in the Overburden Aquifer is generally towards the west-northwest (see Figure 3). A slight groundwater divide is evidenced: overburden groundwater gradients to the west slope to the west-northwest. A lesser gradient to the north and north-east from this slight divide indicate the potential for overburden groundwater flow in these secondary directions as well. Bedrock flow direction is more uniform than the overburden groundwater with flow towards the west-southwest (see Figure 4).

Site-related groundwater contamination is only in the Overburden Aquifer. Samples from the Bedrock Aquifer downgradient of the contaminated Overburden Aquifer areas are not contaminated. Contaminants present in the Overburden Aquifer include benzene, chloroethane, 1,1-dichloroethane, toluene, and xylene.

Soils

Soil sampling was conducted as part of the RCRA Facility Assessment (RFA) and RFI field efforts. Approximately 161 soil samples were collected and tested from various depths. Soil gas samples were also used as a guide to locate highly contaminated areas. Test methods included conventional laboratory analysis as well as laboratory screening methods designed to help identify highly contaminated soils. Grain size and total organic carbon testing was also conducted on selected samples. Table1 shows a summary of contaminants detected in soils that were found at concentrations exceeding reference values from NYSDEC Technical Administrative Guidance memorandum (TAGM) # 4046 Soil Cleanup Objectives guidance document. Exceedances were noted primarily for organic compounds and semi-volatile compounds. Additional information concerning testing can be found in the RFI Report, RFI Phase II Report, and the RFI Addendum Report.

Summary of Facility Risks

Contaminated Media and Chemicals of Concern

The investigations have shown contamination of the soil and groundwater at the ANC site. In response to those findings, ANC conducted a Corrective Measures Study (CMS), to identify potential risks to human health and the environment and to evaluate various remedial alternatives to address site conditions. The CMS report was submitted in May 2003 and approved in March 2004.

Contaminants of concern are primarily volatile organic compounds. Chemicals that have been found in the soils and groundwater at concentrations above comparison values are shown in

Table 1. Groundwater at the site and in the surrounding neighborhood is not used as a drinking water source. Drinking water in this area is supplied by a municipal system.

Baseline Exposure Scenarios

Soils

Soil results were evaluated against NYSDEC TAGM #4046 Soil Cleanup Objective comparison values. Exceedances occurred mainly for volatile and semi-volatile organic compounds. The TAGM #4046 values take into consideration the possible leaching of contaminants from the soil to the groundwater, and are often quite low, due to the very low groundwater protection values that they are derived from. In most cases, comparison values derived from a risk-based approach involving a residential exposure scenario via a direct ingestion/contact exposure pathway, are often higher than the TAGM #4046 levels.

Surface soil (0-2 ft.) soil contamination consisted of a variety of volatile and semi-volatile organics, including aromatics, aliphatics, ketones, and phthalates. Only one surface soil contained any compound in excess of TAGM 4046 threshold action levels. Therefore, any exposure point value would support the conclusion of no significant risk from surface soil contamination to workers or trespassers. Subsurface soil (> 2 ft.) soil contamination consisted of aromatics, aliphatics (fuel-related and solvents), ketones, and phthalates in excess of TAGM 4046 at 9 SWMUs/AOCs. Sewer line replacement and soil removal activities have reduced the potential for ongoing sources at these SWMUs. When the facility was active, ANC replaced aged sewer lines and removed and disposed (off site) 3,853.5 tons of stained and/or visually contaminated soil. Phthalate contamination in soil is well defined to limited locations and has not been a source of groundwater contamination. Contaminated land-filled materials are limited to a discrete area of 5 former unlined pits, and include ketones, which are the likely source of ketones in groundwater.

ANC performed a Human Health Risk Assessment (HHRA) for soils and groundwater at the site. Worker exposures to subsurface soil and groundwater are limited to construction workers, and are of low frequency and duration. The facility is currently used for warehousing and no active subsurface construction is underway or planned for the foreseeable future. Therefore, risks derived from contact with groundwater and subsurface soil are insignificant. Proactive measures to ensure worker protection for all excavation projects is required by ANC.

Groundwater

Groundwater in the central area of the ANC facility is contaminated above New York State comparison values. The potential risk posed by the groundwater depends to a large degree on the ultimate discharge of the groundwater and/or consumption of groundwater. Groundwater can also pose a potential threat to residential homes and/or buildings on site via indoor air quality.

The groundwater data gathered during 1999 - 2002 indicate the combined effects of abiotic and biotic attenuation appear to limit the extent of contaminants in groundwater to a finite area of the overburden within the property boundary and within the limited industrialized section of the ANC facility. Contaminants have not been detected in excess of groundwater standards in down gradient overburden groundwater at wells MW-3, MW-4 and bedrock groundwater at wells MW-3B and MW-4B. Evaluation of contaminant plume sequence maps illustrate a relatively stable contaminant plume condition in the overburden groundwater, with some contaminant plumes disappearing over the course of study.

As a result of the groundwater monitoring, the data indicates that there are no off site impacts or receptors and the contaminated groundwater remains within the boundaries of the site. All residents and workers are supplied by municipal water. Results of the quantitative risk assessment indicated that, under current site conditions no non-carcinogenic risks to public health were identified. Regarding the potential for indoor air risk from contaminants associated with the groundwater, the assessment of potential vapor intrusion exposures to current administrative workers and future site residents outside the industrialized portion of the facility posed by the groundwater indicated that the pathway is incomplete.

Remedial Goals

With the nature and extent of site contamination characterized and the potential risks identified, remedial goals were established. In order for a remedy to be acceptable, it needs to satisfy the remedial goals listed below. The primary goal is to protect human health and the environment from potential impacts associated with the ANC Site. The following goals have been identified:

- Eliminate the future risk to human health posed by the contaminated soil and remaining source materials present within the industrialized area of the facility.

- Eliminate the future risk to human health posed by the contaminated overburden groundwater present beneath the industrialized area of the facility.

- Control migration of the contaminated groundwater.

Remedial Actions to Date

Testing of the Process Sewer (SWMU 3) conducted during the RCRA Facility Assessment (RFA) indicated the sewer lines had failed in certain areas. Soil samples collected in potential leak areas confirmed that the process sewer lines had leaked and contaminated the surrounding areas. As a result, ANC replaced the sewer lines and removed 3853.5 tons of contaminated soils. The East and West Influent Wells (SWMUs 5 and 6) were decontaminated and abandoned. The East and West Wells were replaced and contaminated soils were removed.

Summary of Alternatives

The following are general response actions alternatives that may be appropriate for the media of concern at the Site:

- **No Action** - The no-action response would essentially leave the Site in its current condition. Under No Action, conditions would not be monitored or periodically reviewed.

- **Natural Attenuation** - Under Natural Attenuation, Contaminants of Concerns (COC) levels would be reduced via natural biologic and abiotic degradation, dilution via rainfall infiltration, groundwater flushing, and other physical and biological processes.

- **Use Restrictions -** Use restrictions include implementation and maintenance of institutional controls such as activity and use limitations (i.e., physical barriers, administrative barriers, security fencing and pavement) to limit exposure to Site COCs.

- **Containment** - Containment measures include various technologies to contain and/or isolate the COC. These measures prevent migration of the COC without disturbing or removing the materials in place. These measures generally consist of methods which cover, seal, stabilize, or provide an effective physical or hydraulic barrier around specific areas.

- **Withdrawal/Collection** - Collection of contaminated groundwater may be achieved via withdrawal techniques such as pumping, gravity drainage, and use of product-only recovery equipment. Treatment technologies include chemical, biological, or physical systems for separation, concentration, or destruction.

- In-Situ Treatment - In-Situ treatment technologies include physical separation (i.e., soil immobilization/destruction by high temperature methods) or in place treatment to reduce contaminant loads.

- **Removal** - Removal measures include excavation of contaminated media. The removed media may require ex-situ treatment or stabilization prior to disposal or re-use.

- **Disposal** - Disposal measures include reuse, recycle, or disposal at an approved landfill. The removed media may require ex-situ treatment or stabilization as part of disposal or reuse.

- **Ex-Situ Treatment** - Technologies similar to in-situ treatment methods may be employed. Media with multiple groups of COC may require more than one process to effectively treat all of the contaminants, resulting in multiple treatment processes.

- **Discharge** - Discharge of treated effluent (air emissions or wastewater) is often required for ex-situ treatment options. Regardless of the discharge process, treatment system effluent must meet regulatory discharge criteria.

Corrective Measures Evaluation

The results of the investigations completed to date, the updated conceptual model of contamination within the soil and groundwater, and the updated assessment of risks form the basis for evaluating the corrective measures for the ANC facility. This evaluation:

1. Identifies appropriate institutional controls regarding specific activities and uses that will have the potential for human health impacts;

2. Evaluates alternative measures to assure that the activities and uses within the limits of contamination can be effectively controlled;

3. Evaluates a groundwater remedy appropriate for the groundwater contaminant plume that resides within the boundaries of the facility;

4. Considers additional geochemical data that provides lines of evidence useful for indirectly demonstrating the types of natural attenuation processes active at the ANC Burt facility; and

5. Assesses the rates of contaminant sorption, dilution, volatilization, and biological degradation that may be occurring within the groundwater at the ANC facility.

The focused Corrective Measures Study (CMS) identified a limited set of corrective measures technologies for final re-evaluation. The list of corrective measures technologies includes:

- Activities and Use Restrictions-Institutional Controls for soil and groundwater;
- Excavation and off-site disposal of soil and source materials at a secure landfill;
- Recycling of contaminated soil and source materials at an asphalt batching facility;
- Low temperature thermal treatment of soils and source materials;
- Monitored natural attenuation of groundwater contamination.

Candidate Corrective Measure

Technologies considered most suitable have been assembled into a corrective measure alternative for evaluation. One corrective measure alternative was identified for further consideration: the candidate corrective measure includes institutional controls and monitored natural attenuation of groundwater contamination.

Institutional Controls

Institutional controls consisting of deed restrictions or covenants, to restrict activities on the site will be implemented. ANC will draft and record the appropriate legal documents, and will submit the specific information to NYSDEC. ANC will notify adjacent property owners, state and local health departments and clerks of the governing bodies of the municipality of the intent to establish institutional control. The notification provided will describe the type and areal extent of the contamination to be addressed by the institutional control; the proposed remedial action and its projected duration; and the limitation of on-site use that will be necessary based on the contamination present and the proposed remedial action. Specific activity restrictions shall be imposed to address potential risks via exposure to surface soil (one location), considered a potential exposure route for industrial workers, construction workers and visitors. Specific activity restrictions shall also address potential risks via exposure to subsurface soil, considered a likely exposure route for construction workers. Specific activity restrictions shall also be imposed to address potential future risks from property groundwater use for public or private potable supply. A deed restriction prohibiting the use of on-site groundwater and completion of a soil management plan that will apply to excavations and other soil handling projects at the site will define the restrictions and activity limitations.

Monitored Natural Attenuation

Monitored Natural Attenuation (MNA), the reliance on natural attenuation processes to achieve site specific remedial objectives, is a component of the proposed remedy. The natural attenuation processes that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under certain conditions can act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil and groundwater. These in-situ processes include biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction of contaminants. Groundwater throughout the site will be monitored to determine the long term effectiveness of natural attenuation. Downgradient wells near the property boundary line will also be monitored to verify that there is no off-site contaminant migration. A formalized monitoring program will be developed for the ANC facility specifying the location, frequency, and type of samples and measurements necessary to evaluate remedy performance, as well as

defining the anticipated performance objectives of the remedy (i.e. achievement of groundwater cleanup goals). Performance monitoring will continue as long as contamination remains above 6NYCRR 703.5 groundwater standards. Monitoring will continue for a period of a least one year after cleanup levels have been achieved, to ensure that concentration levels are stable and remain below target levels.

The candidate corrective measure alternative consisting of institutional controls and monitored natural attenuation meets all remedy selection criteria and has been recommended for implementation. This recommendation is based on technical, human health, and environmental considerations. The performance, reliability, implementability, and safety evaluations have been completed, and form the basis for the conclusion that the corrective measure alternative is technically feasible, protective of human health, and meets environmental criteria.

Performance

This criterion focuses on the effectiveness and useful life of the corrective measure. The use of institutional mechanisms to memorialize land and resource-use constraints and provide for safety has been used extensively throughout the United States. Institutional controls are effective and have an unlimited useful life when the definition of "what contamination can remain at a site and under what conditions" or "how clean is clean" is defined based upon current land-use and exposure scenarios. Monitored Natural Attenuation (MNA) has proven effective as a site remedy if adequate site characterization exists, and MNA lines of evidence are established in support of MNA. The ANC has been fully characterized in the RFI and CMS process. The historical groundwater data collected demonstrate a clear and meaningful trend of decreasing contaminant mass and/or concentration over time. Also, hydrogeologic and geochemical data indicates the natural attenuation process is occurring at the site.

Reliability

This criterion focuses on the demonstrated and expected reliability of the corrective measure, including operation and maintenance requirements. The reliability of institutional controls has been demonstrated effective at numerous contaminated state and federal sites over the past 20 years. Performance monitoring to evaluate remedy effectiveness and to ensure protection of human health and the environment is a critical element for MNA due to potentially longer time frames, potential for ongoing contaminant migration, and other uncertainties associated with using MNA. Given the slow groundwater transport times at the ANC, and the fact that the facility will no longer be engaged in manufacturing, the monitoring program will be sufficient to detect the changes in site conditions. Performance monitoring will continue one year beyond the time at which remediation objectives have been achieved, to verify that the site no longer poses a threat to human health or the environment.

Implementability

This criterion focuses on the relative ease of implementation, and the time required to achieve remedial response. Implementation of institutional controls and MNA will be relatively rapid. Institutional controls will take advantage of existing controls (security) and will be supplemented with deed notices and covenants that can be recorded in a six months to one year time frame. Implementation of MNA will also be rapid because the monitoring wells are in place and a monitoring program can begin immediately after a remedy decision has made.

Safety

This criterion focuses on the threat to nearby communities and environments as well as those to workers during implementation. Because the remedy does not involve intrusive activities, there will be no change to safety of current site users and the nearby communities and environments. Future site users will benefit from activity and use restrictions put in place to assure future risks from contaminated media are avoided until such time that restrictions are no longer needed.

PUBLIC PARTICIPATION

The Department encourages input from the community on the remedial methods proposed. The public is also invited to provide comments on remedial alternatives not addressed in the CMS. The Department has set a public comment period from September 1, 2004 to October 16, 2004, to solicit public participation in the selection process.

The administrative record is available at the following locations:

Mr. Stanley Radon

New York State of Environmental Conservation

270 Michigan Avenue

Buffalo, NY

(716)851-7220

or

Mr. Richard J. Rychlicki

Akzo Nobel Polymer Chemicals LLC

2153 Lockport-Olcott Road

Burt, New York 14028

(716)778-8554 ext.104

Table 1

Action Levels for Soil and Groundwater

		Threshold action	level
Contaminant	Media with exceedance	Soil (mg/kg)	Groundwater (ug/l)
Acetone	Soil, GW	0.2	50
Benzene	GW	0.06	0.7
2-Butanone	Soil, GW	0.3	50
Chlorobenzene	GW	1.7	5
1,2-Dichlorobenzene	GW	7.9	5
1,3-Dichlorobenzene	GW	1.6	5
1,4-Dichlorobenzene	GW	8.5	5
1,1-Dichloroethane	GW	0.2	5
1,2-Dichloroethane	GW	0.1	5
1,2-Dichloroethene	GW	0.25	5
Styrene	GW	N/A	5
Ethylbenzene	GW	5.5	5
Toluene	GW	1.5	5
1,1,1-Trichloroethane	GW	1.5	5
Trichloroethene	GW	0.7	5
Vinyl Chloride	GW	0.2	2
Xylenes (Total)	GW	1.2	5
Napthalene	GW	13	10

Soil values obtained from NYSDEC TAGM #4046 - Determination of Soil Cleanup Objectives and Cleanup Levels

Groundwater values obtained from 6 NYCRR 703.5 Standards