

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III
STATEMENT OF BASIS
OLIN MICROELECTRONICS MATERIALS
731 ENGLER ROAD
NAZARETH, PENNSYLVANIA 18064
EPA ID NO. PAD 002 389 104

i. **Introduction**

The United States Environmental Protection Agency (“EPA”) is issuing this Statement of Basis (“SB”) to solicit public comment on EPA’s determination that the Olin Corporation Nazareth Plant Facility (“Olin” or “Facility”) located at 731 Enger Rd. in Nazareth within Plainfield Township in Northampton County, Pennsylvania, has attained Corrective Action Complete with Controls. The Facility is subject to the requirement of performing corrective action activities because it is subject to the provisions of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (“RCRA”), and the Hazardous and Solid Waste Amendments of 1984 (“HSWA”), 42 U.S.C. §§ 6901 - 6992. Section 3013 of RCRA, 42 U.S.C. § 6934, requires facilities such as Olin to investigate and clean up releases of hazardous wastes or hazardous constituents that have occurred at their facility. This Statement of Basis explains EPA’s preliminary determination that Olin has fully investigated and properly cleaned up the Facility pursuant to the authority of the Commonwealth of Pennsylvania’s Land Recycling and Environmental Remediation Standards Act (“Act 2”).

In April 2004, EPA Region III and the Commonwealth of Pennsylvania Department of Environmental Protection (“PADEP”) entered into a One Cleanup Program Memorandum of Agreement (“MOA” or “Agreement”) to, among other things, facilitate PADEP’s implementation of Pennsylvania’s Voluntary Cleanup Program (“VCP”) under the authority of Act 2 and to promote the One Cleanup Program initiative by working together in a coordinated manner to avoid duplication of effort at properties subject to RCRA and to ensure the remediation of such properties in a timely fashion. The Agreement describes the circumstances in which EPA will use Final Reports submitted pursuant to the VCP of Act 2 to issue final decisions regarding corrective action completions at certain facilities. At the Olin Facility, PADEP has approved the Final Report, Cleanup Plan, Site Characterization Report (Remedial Investigation Report), and Risk Assessment Report submitted pursuant to Act 2 and has provided an Act 2 Release of Liability to Olin for areas within the Facility which have been remediated. EPA, PADEP, and Olin have worked together throughout this process to ensure that the corrective actions performed by Olin under the VCP of Act 2, and the Final Report, Cleanup Plan, Site Characterization Report (Remedial Investigation Report), and Risk Assessment Report submitted to PADEP documenting its actions, would provide the information necessary for EPA to issue a final decision regarding corrective action completion at the Facility.

EPA has reviewed the reports submitted to PADEP on behalf of Olin pursuant to Act 2, the PADEP letters of approval, the results of soil and groundwater sampling activities, past and present environmental practices at the Facility, historical investigations conducted at the Facility, and reports of remedial activities conducted at the Facility. As a result of this review, EPA has determined that Olin has met its RCRA corrective action obligations at the Facility, and that the Facility can be designated “Corrective Action Complete with Controls.”

PADEP’s approval of Olin’s Final Report and Cleanup Plan, include the following to be performed by Olin: annual groundwater and surface water monitoring, annual site reconnaissance, annual site report, and a restrictive deed notice. The proposed control requiring Olin to place a restrictive deed notice on the property is to ensure that groundwater will be used

only for non-residential purposes. These proposed controls apply to the site soils and groundwater associated with Olin's "tract 1". This proposal to designate the Facility as Corrective Action Complete with Controls is consistent with current EPA guidance entitled "Final Guidance on Completion of Corrective Action at RCRA Facilities (February 25, 2003)."

II. Facility Background

The site is located at 731 Enger Rd. in Nazareth within Plainfield Township in Northampton County, Pennsylvania. The facility was established in 1972 as Hi-Pure Chemicals, Inc. The site consists of tract # 1 and tract # 2. The tracts are non-contiguous properties, and industrial activity was limited to tract # 1. Tract # 1 is approximately 360 feet by 650 feet and consists of a large manufacturing building/warehouse and an office building. Industrial activities conducted by the Olin Corporation began in 1984. The facility repackaged and purified industrial, electronic, and food grade acids. Materials handled at the site included: ammonium hydroxide, hydrochloric acid, hydrofluoric acid, acetic acid, nitric acid, ammonia, hydrogen fluoride, phosphoric acid, sulfuric acid, and ammonium bifluoride.

The site is currently inactive and zoned for use as Industrial/Business Park. During operations, the facility obtained several permits, including a water management permit, an air permit, and a RCRA (Resource Conservation Recovery Act) permit for the treatment and storage of hazardous waste. Permitted units, including the RCRA Elementary Neutralization Unit and storage pad are currently closed and dismantled. The groundwater and surface water monitoring program originally associated with the permitted units is still conducted at the site.

Storage tanks, both aboveground and underground, and sumps have been removed during the site demolition activities, which were completed in 1998. A permitted spray irrigation system, for non-contact cooling water, was operated on the northwest side of the property. The use of the spray irrigation system ended in 1987. Two surface water impoundments were formerly in use at the site. The firewater pond located west of the property has been drained, but may be re-commissioned for use by a new owner. The retention pond has been drained, cleaned, and filled with crushed decontaminated concrete and stone fill. In addition, during demolition activities that occurred in 1998, process equipment, process lines, HVAC units and duct work were removed, and minor building repairs completed. One production well, PW-1, remains at the site, but is inactive.

The site soil is glacial drift overlying shale/slate bedrock. The upper layer of the bedrock is characterized by fractures. Site monitoring wells were completed in overburden, fractured bedrock, and bedrock to monitor groundwater quality in multiple zones. Groundwater flow is toward the Little Bushkill Creek located east of the site.

III. Summary of the Environmental Investigation

The Remedial Investigation activities were conducted in accordance with the provisions of Act 2, dated July 17, 1997; revisions to Act 2, dated November 24, 2001; the Land Recycling

Program Technical Guidance Manual (“TGM”) final draft, dated December 1997; and revisions to the TGM, dated June 8, 2002. The objectives of the Remedial Investigation activities were to evaluate environmental conditions at the Facility, to demonstrate attainment of Remediation Standards under Act 2, to achieve site closure and receive a No Further Action designation from EPA, and to support a petition for a Release of Liability from PADEP. To achieve these objectives, Olin completed a series of soil, groundwater, and surface water investigations which included sampling of monitoring wells, surface water sampling, and sampling of soils in order to demonstrate attainment of State Health Standards and Site-Specific Standards for soils, surface water, and groundwater. This work was documented in Final Report submitted on behalf of Olin, dated August 16, 2005. The report was submitted to PADEP for approval pursuant to Act 2. PADEP approved the Final Report by letter dated March 30, 2006.

IV. Investigation Results

A. Soil Contamination

The Final Report for the Olin Site was submitted to PADEP on August 16, 2005, pursuant to Act 2. The Final Report indicated that soil samples were collected during three sampling events at the Site from 1995 to 2000. In April 1995, 17 samples were collected and analyzed for chloride, fluoride, nitrate, pH, and sulfate. Samples were collected from depths of 0.5 to 2 feet, 2 to 5 feet, and 12 feet below ground surface (bgs). In July 1996, 19 samples were collected and analyzed for pH and nitrate following a release of nitric acid. Samples were collected from depths up to 15 feet bgs. In May 2000, 65 samples were collected from 0.5 to 5 feet bgs and were analyzed for pH, ammonia, chloride, fluoride, nitrate, nitrite, and sulfate.

Concentrations for fluoride in soil ranged from 1.2 mg/kg to 253 mg/kg. Concentrations of sulfate and nitrate in soil ranged from 26.9 mg/kg to 21,900 mg/kg and 0.322 mg/kg to 304 mg/kg, respectively. Ammonia was the only constituent which has an Act 2 Statewide health cleanup value. Concentrations for ammonia ranged from 0.68 mg/kg to 31.9 mg/kg and are well below the residential direct contact MSC of 1,900 mg/kg. There are no corresponding concentrations listed for ammonia under EPA Risk Based Concentrations. Concentrations for chloride in soil ranged from 2.52 mg/kg to 404 mg/kg. Nitrite was detected once at a concentration of 1.7 mg/kg. The range for pH measurements in soil was 2.8 to 11.2 s.u. with one sample below 3 s.u. and one sample above 11 s.u. The one low pH soil sample was obtained from below the manufacturing building foundation, and should not present a risk through direct contact or leaching. If the warehouse building and slab foundation are demolished in the future, a limited soil removal of low pH soils may be warranted.

The soil results attained the either the Act 2 Statewide Health Standard or the site specific standard for direct contact and for protection of groundwater resources. In the Risk Assessment Report, the soil data was also compared to risk-based industrial soil screening criteria. The maximum detected soil concentrations were less than the risk-based screening criteria. Based on the comparison to the available Act 2 Statewide Standards for soil and the USEPA Region III

risk-based screening criteria, it has been determined that residual chemicals in soil do not pose a threat to human health under an industrial land use scenario.

B. Groundwater Contamination

Groundwater samples have been collected at the Site since the mid-1980s. Six site-related constituents (ammonia as nitrogen, chloride, fluoride, nitrate, nitrite, and sulfate) and pH have been analyzed during these events. In 2004, water samples were also analyzed for total and hexavalent chromium and in 2005 samples were also analyzed for volatile and semivolatile organic compounds. However, none of these compounds were detected in Olin's sampling and analysis. Based on results from sampling episodes conducted from 1990 through 2005, these semiannual or annual groundwater quality monitoring events have demonstrated that site concentrations of ammonia, chloride, and nitrite are less than Statewide Health Standards. These monitoring events have also indicated water quality in three locations (H-3, H-4, and MW-1) are consistent with Statewide Health Standards for fluoride, nitrate, and sulfate. However, data collected from monitoring wells H-1, H-2, H-5, H-6, H-7, PW-1, and closed-out former production well PW-2B show exceedances greater than the PADEP Statewide Health Standards for one or more of the following compounds: fluoride, nitrate, and sulfate.

Detected groundwater concentrations in samples collected from 1990 through 2005, have been compared to residential and non-residential Medium-Specific Concentrations (MSCs) for Used Aquifers with Total Dissolved Solids (TDS) less than 2,500 mg/L and Pennsylvania Drinking Water Standards. Detected concentrations of ammonia, chloride, and nitrite are below the residential and non-residential MSCs. Results for chloride have ranged from 1.3 mg/L to 232 mg/L during the last 15 years. These results are less than the secondary EPA Maximum Contaminant Level (MCL) of 250 mg/L. Nitrite has been detected in 80 of 175 samples at concentrations of 0.0012 mg/L to 0.64 mg/L, which are below the residential groundwater MSC of 1 mg/L. Two results for sulfate greater than the residential MSC of 500 mg/L were reported in well H-6 during the spring 1999 (618 mg/L) and May 2001 (656 mg/L) sampling events. The sulfate results for well H-6 decreased to 115 mg/L in June 2003 and 60.4 mg/L in June 2004. Concentrations of nitrate as nitrogen ranged from 0.68 to 353 mg/L. Multiple detections for nitrate are above the most stringent groundwater MSC (10 mg/L). However, since the 2000 sampling event, only one concentration (54.3 mg/L in H-6) has exceeded 20 mg/L. The most hydraulically upgradient well, H-1, has had concentrations ranging from 8.9 to 12.6 mg/L during the last ten episodes, indicating that nitrate is naturally occurring or that another source may be present in the area. The Site was formerly a farm and several farms are currently located in the vicinity. There are also septic tanks present at the Site and at surrounding properties. Elevated concentrations of fluoride (i.e., greater than 2 mg/L) are associated with monitor wells H-6 and H-7. H-6 is located on the eastern perimeter and H-7 is hydraulically downgradient of the former retention pond. Fluoride concentrations in other shallow bedrock monitor well samples are consistently less than 2 mg/L. TDS measurements ranged from less than 1 mg/L to 2,577 mg/L. Several measurements of TDS have been detected at concentrations greater than the MSC based on the secondary MCL of 500 mg/L. TDS measurements in hydraulically upgradient well H-1 range from 58 to 1,100 mg/L, indicating that TDS are naturally elevated in

the shallow zone. Measurements for ammonia as nitrogen in shallow bedrock wells have ranged from less than 0.2 mg/L to 1.3 mg/L. Concentrations in deeper bedrock wells have been slightly higher (<0.01 mg/L to 2.8 mg/L).

C. Surface Water

The Little Bushkill Creek has been monitored on a biannual basis to evaluate whether or not potential shallow groundwater discharges were adversely impacting surface water quality. Data collected from the creek indicate no evidence of adverse impacts. No exceedances of surface water quality criteria protective of human health and aquatic life have been observed. The designated downstream sampling location results do not differ significantly from results from the designated upstream sampling location, and do not show any impact from potential groundwater discharges to the Little Bushkill Creek.

D. Off-site Groundwater

In August 2004, a residential well located approximately 350 feet southeast of the site was sampled and analyzed for site-related constituents. The only constituents detected included chloride and sulfate. The concentrations of both chemicals were less than drinking water standards and were consistent with regional background concentrations.

Based on the characteristics of the bedrock at the site, future off-site exposure pathways are also expected to be incomplete, especially since construction within the flood plain which is located between the site and the Little Bushkill Creek is restricted and the property located downgradient of the site is predominantly located in a flood plain. Including the use of land use controls, the site attains compliance with either the Act 2 Statewide health standard (for chloride, ammonia, and nitrite) or the site-specific standard (for fluoride, nitrate, and sulfate) in groundwater.

E. Ecological Screening

Chemical constituents detected on site in soil and groundwater are not considered to be constituents of ecological concern, and no complete pathways of exposure were identified. Limited ecological habitat was observed on site; off-site areas with potential habitat have not been impacted by past industrial activities. No additional ecological evaluation is required for the site under PADEP guidelines

F. Final Report

By letter dated March 30, 2006, PADEP approved the August 16, 2005 Final Report submitted on behalf of Olin pursuant to Act 2 and granted to Olin an Act 2 Release of Liability for the Site.

V. Control Activities

A. Soil

Site investigations completed by Olin at the Facility, indicate that levels of ammonia as nitrogen, chloride, fluoride, nitrate, nitrite, and sulfate are below the Act 2 Non-Residential Statewide Health Standards. Complete exposure pathways to site soils do not exist at the Facility because the contamination levels of the surface soil are either below Non-Residential Act 2 Statewide health or site-specific derived risk standards, or the soils impacted by low pH are covered by the existing Facility building.

B. Groundwater

A conceptual site model was developed for Olin which indicates that on-site receptors may potentially come into contact with shallow groundwater during construction or during the use of deep bedrock groundwater for potable or industrial use. These potential exposure pathways were quantitatively addressed in Olin's Risk Assessment Report. No unacceptable potential risks for industrial or construction workers exposed to groundwater were identified. However, in order to support a Site-Specific Standard (SSS) for fluoride, nitrate, and sulfate, the exposure assumptions used in the Risk Assessment were used to calculate acceptable concentrations in groundwater. These calculations are based on a target hazard index of one and are presented in the Risk Assessment Report. The SSS for fluoride is 6.1 milligrams per liter (mg/L). The SSSs for nitrate and sulfate are 160 mg/L and 730 mg/L, respectively. Olin will place a groundwater use restriction on the property via a deed notice. This notice will specify that site groundwater from existing wells shall not be used for any purpose except monitoring, with the exception that existing production well PW-1 may be used for any purpose except drinking water unless first pre-treated to reduce the concentration of fluoride to below the MCL of 2.0 mg/l. Any new wells drilled on site in the future for any purpose other than monitoring must first be shown, through adequate sampling and analysis, to be safe for their designated intended purpose and must first be approved for use, in writing, by the PADEP, and may require periodic monitoring to ensure their continued safe use.

VI. Voluntary Action by Olin

To confirm that groundwater quality is improving, Olin will continue to monitor groundwater at the Site on an annual basis. Olin will perform the groundwater monitoring activities annually in accordance with "The Cleanup Plan" approved by PADEP on March 30, 2006. The groundwater and surface water sampling program will continue until the Statewide Health Standards or asymptotic conditions are achieved in the groundwater sampling results. When enough data has been collected to show that the relevant standards are met, Olin will submit a supplement to the Final Report and request termination of groundwater sampling. When asymptotic conditions show no statistically significant variation between sampling episodes, Olin will request that the monitoring program be reduced.

VII. Evaluation of Criteria

This section provides a description of the criteria EPA uses to evaluate proposed final remedies under the Corrective Action Program. The criteria are applied in two phases. In the first phase, EPA evaluates three remedy threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

A. Threshold Criteria

1. Protection of Human Health and the Environment

Numerous biannual surface water sampling events have not indicated any evidence to suggest that the creek has been negatively impacted from groundwater discharges to the creek.

An evaluation of potential impacts to human and ecological receptors from Site conditions was completed in accordance with all applicable and appropriate PADEP and EPA rules and regulations.

The only possible exposure route to contaminated groundwater or soil at the Facility is to workers taking environmental samples or to workers excavating soil at the facility. It is also relevant to note that the current levels of groundwater contamination do not represent an immediate threat to anyone who may be exposed during routine sampling or construction activities.

2. Achieve Media Cleanup Standards

Site investigations completed by Olin demonstrate that levels of ammonia as nitrogen, chloride, fluoride, nitrate, nitrite, and sulfate in soils are below either the Act 2 Non-Residential Statewide Health Standard or the site-specific derived risk standards. Historic groundwater data indicates that concentrations of fluoride, nitrate, and sulfate in groundwater at the Site have steadily declined. Olin will continue to monitor the groundwater conditions at the Site to ensure that groundwater quality continues to improve.

3. Control the Release(s)

Sampling results and fate and transport modeling supports the determination of lack of impacts to surface water from Site groundwater.

The Facility has filed a notice with the deeds to the property which provide notice that groundwater use of the property is limited to non-residential use; and a Post Remedial Care Plan, which requires annual groundwater and surface water monitoring is in place and must be executed annually.

B. Balancing Criteria

Because the proposed remedy consists of measures which have already been completed and because EPA is satisfied that the proposed remedy is protective of human health and the environment, EPA is not choosing among alternative remedies. Therefore, an evaluation of the balancing criteria is unnecessary. Nonetheless, EPA presents the seven criteria below to illustrate the suitability of the proposed remedy:

1. Long-Term Reliability and Effectiveness

The Facility's Act 2 investigations and remediation activities have addressed soil and groundwater contamination at the Site. PADEP and EPA will oversee the monitoring activities and evaluate the continued effectiveness of Olin's groundwater and surface water monitoring program.

EPA also considers the restrictions of on-site groundwater use and the restrictions on the use of the property to non-residential use as long-term components of the control activities. Olin is required to file a notice with the deed to the property that provides notice that use of the property is limited to non-residential use

2. Reduction of Toxicity, Mobility, or Volume of Wastes

Unacceptable or complete exposure pathways do not exist at this facility. This has eliminated the potential for direct contact exposure and reduced the mobility of the contaminants as well.

3. Short-Term Effectiveness

The short-term effectiveness of a remedy is related to the risks posed to the community and workers involved in the design, construction and implementation of the remedy. The short-term risks posed by the proposed remedy for the Facility are minimal. Contamination is below established health or risk based standards and monitoring is expected to continue.

In addition, continued monitoring provides information regarding environmental conditions and provides a basis for the Facility to respond to changes in the future, if necessary.

4. Implementability

Implementability includes the technical and administrative feasibility of constructing and operating the proposed remedy. The proposed remedy for the Facility is both technically and administratively feasible. The groundwater monitoring technology and protocol are already in place and have been approved by PADEP and EPA. Further, EPA proposes to implement the proposed remedy through the One Cleanup Program Agreement with Olin Corporation which will include institutional controls. Under this approach, Olin has provided PADEP a written commitment to complete the steps outlined in the final remedy. In the event that Olin fails to implement the final remedy as specified under Act 2 Facility-Lead Agreement, EPA has

authority to compel Olin to perform the necessary work.

5. Cost

Olin has already expended the capital costs involved in performing the investigations and remedial activities necessary to obtain a Release of Liability pursuant to PADEP's Act 2 program and in implementing the proposed control activities at the Facility. The estimated cost required for annual groundwater and surface water monitoring, annual site reconnaissance, and an annual site reporting for five (5) years is \$100,000.00 (in 2006 dollars). At this level of cost, and low residual risk, EPA will not require financial assurance.

6. Community Acceptance

EPA will provide public notice and an opportunity for comment to any interested parties before this proposed decision becomes final.

7. State Acceptance

PADEP issued letters approving Olin's Act 2 Final Report and Cleanup Plan granting Olin an Act 2 Release of Liability on, March 30, 2006 (for tract # 1). EPA's proposed determination that the Olin Facility is Corrective Action Complete with Controls is based upon the activities performed by Olin pursuant to PADEP's Act 2.

Under the terms of the One Cleanup Program Agreement, EPA finds that Olin's actions have met the necessary criteria for *Protectiveness* found in Section V.C of the Agreement. Olin has met (or is meeting) final cleanup goals, has assessed the entire Facility, and has addressed all releases, including all SWMUs and AOCs, identified by PADEP and EPA.

VIII. Environmental Indicators

EPA has established two environmental indicators that are designated to measure the human health and groundwater impacts of RCRA facilities. These two indicators use environmental data and apply a decision matrix to determine that human health impacts are "under control" and that groundwater contamination is "under control". Olin met the human health indicator at the Facility on December 22, 2005, and the groundwater indicator on January 4, 2006. EPA believes that these environmental indicators provide additional evidence that the actions completed and proposed for Olin have been effective and will protect human health and the groundwater at the Facility in the long-term.

IX. Public Participation

EPA is requesting comments from the public on its determination that the Facility is Corrective Action Complete with Controls. On XXXX xx, 2006, EPA placed an announcement in the local newspaper, AThe Morning Call@, to notify the public of the availability of this Statement of Basis, its supporting Administrative Record, and the public's opportunity to request a public meeting on EPA's proposed corrective action for the Facility. The public comment period will last thirty (30) calendar days from the date that this matter is publicly

noticed in a local paper. Comments should be sent to EPA in writing to the address listed below, and all commentors will receive a copy of the final decision and a copy of the response to comments.

A public meeting will be held upon request. Requests for a public meeting should be made to Mr. Grant Dufficy of the EPA Regional Office at the address listed below or at 215-814-3455.

The Administrative Record contains all information considered by EPA when making this determination. The Administrative Record is available for review during business hours at the following location:

U.S. Environmental Protection Agency Region III (3WC22)
1650 Arch Street
Philadelphia, PA 19103
Contact: Grant Dufficy
Phone: 215-814-3455 Fax: 215-814-3113
E-mail:dufficy,grant@epa.gov

Following the thirty (30) day public comment period, EPA will prepare a Final Decision and Response to Comments in which it will identify the selected remedy for the Facility. The Response to Comments will address all significant written comments and any significant oral comments generated at a public meeting, if such a meeting is held. The Final Decision and Response to Comments will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are proposed to be made to the remedy for the Facility as proposed by EPA in this Statement of Basis, EPA will seek additional public comments on any proposed revised remedy.

Date:

James J. Burke, Director
Waste and Chemical Management Division
US EPA, Region III