

**UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
REGION III**

**FINAL DECISION  
CHEMTRADE SOLUTIONS LLC  
(Formerly General Chemical Corp.)  
Delaware Valley Works Facility**

**PURPOSE**

The United States Environmental Protection Agency (EPA) is issuing this Final Decision and Response to Comments (FDRTC or Final Decision) selecting the Final Remedy for the South Parcel of the South Plant (South Parcel) of the Delaware Valley Works facility, also known as the former General Chemical facility (RCRA ID number DED154576698) (Facility) located in Claymont, New Castle County, Delaware. The Final Decision is issued pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. Sections 6901, et seq.

On March 22, 2016, EPA issued a Statement of Basis (SB) in which it described the information gathered during environmental investigations at the South Parcel of the Facility and proposed a Final Remedy for the South Parcel. The SB is hereby incorporated into this Final Decision by reference and made a part hereof as Attachment A.

This FDRTC selects the remedy that EPA evaluated under the SB. Consistent with the public participation provisions under RCRA, EPA solicited public comment on its proposed Final Remedy. On March 22, 2016, notice of the SB was published on the EPA website: [[https://www.epa.gov/aboutepa/epa\\_delaware](https://www.epa.gov/aboutepa/epa_delaware)] and in The News Journal newspaper. The thirty (30) day comment period ended on April 21, 2016.

EPA received six letters during the public comment period, all in support of the SB. Based on this response EPA has determined it is not necessary to modify the proposed Final Remedy set forth in the SB; thus, the remedy proposed in the SB is the Final Remedy selected by EPA for the South Parcel.

**FINAL DECISION**

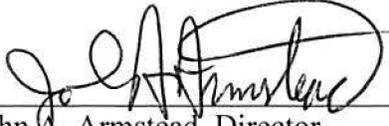
EPA's Final Remedy for the South Parcel consists of the following:

- Installation and maintenance of a low permeability cap including the development and implementation of a Cap Maintenance Plan (CAP) and a Materials Management Plan (MMP); and,
- Compliance with and maintenance of the CAP, the MMP and other land and groundwater use restrictions.

## DECLARATION

Based on the Administrative Record compiled for the corrective action at the South Parcel, I have determined that the remedy selected in this Final Decision and Response to Comments, which incorporates the March 22, 2016 Statement of Basis, is protective of human health and the environment.

Date: 5.10.16

  
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John A. Armstead, Director  
Land and Chemicals Division  
U.S. Environmental Protection Agency, Region III

Attachment A: Statement of Basis (March 22, 2016)

Attachment A





UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
REGION III

STATEMENT OF BASIS

Chemtrade Solutions LLC  
(Formerly General Chemical Corp.)  
Delaware Valley Works Facility  
6300 Philadelphia Pike

CLAYMONT, DELAWARE

EPA ID NO. DED154576698

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## ACRONYMS AND ABBREVIATIONS

AOC	Areas of Concern
AR	Administrative Record
CMP	Cap Management Plan
CMS	Corrective Measures Study
COCs	Contaminants of Concern
DNREC	Delaware Department of Natural Resources and Environmental Control
EPA	United States Environmental Protection Agency
ICs	Institutional Controls
IAO	Initial Administrative Order
MMP	Materials Management Plan
mg/kg	milligram/kilogram
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RSL	Regional Screening Level
SB	Statement of Basis
SWMU	Solid Waste Management Unit
ug/L	micrograms per liter

## **A. INTRODUCTION**

The United States Environmental Protection Agency (EPA) invites public comment on this Statement of Basis (SB) for the proposed remedy for the South Parcel of the South Plant (South Parcel) of the Delaware Valley Works facility, also known as the former General Chemical facility (RCRA ID number DED154576698) (Facility) located in Claymont, New Castle County, Delaware. The approximate 100-acre Facility is located at 6300 Philadelphia Pike, Claymont, DE and is subject to the Corrective Action program under the Solid Waste Disposal Act (SWDA), as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. §§ 6901 et seq.

The purpose of this SB is to solicit public comment on the proposed remedy for the South Parcel (approximately 22 acres), as part of redevelopment and economic revitalization of the local area. EPA's proposed remedy requires the installation of an engineered cap in conjunction with land use restrictions through protective institutional controls to reduce risks from contaminated soils at the South Parcel. The proposed remedy documented in this SB is specific to the contaminated soils at the South Parcel, and does not include other media. However, the potential impact that the contaminated soils at the South Parcel may have on groundwater was considered during the development of this SB; therefore, this SB includes the proposed Corrective Action Objective for groundwater. EPA will issue a separate SB addressing the groundwater at the South Plant, to solicit public comment once the South Plant-related groundwater has been further evaluated under the Corrective Action Program.

Before EPA makes a final decision on its proposed remedy for the South Parcel, the public may participate in the remedy selection process by reviewing this SB and documents contained in the Administrative Record (AR) for the Facility. The AR contains the complete set of reports that document Facility conditions, including a map of the Facility, in support of EPA's proposed decision. EPA encourages anyone interested in this matter to review the AR. The AR is available at the EPA Region III office, the address of which is provided in Section H, below.

## **B. FACILITY BACKGROUND**

The Facility was a chemical manufacturing plant which once consisted of approximately 100 acres. It is divided, by Route 13, into two separate plants, referred to as the "DVW North Plant" and "DVW South Plant," respectively. Approximately two-thirds of the DVW North Plant is located in Pennsylvania with the remainder situated in Delaware. Virtually all of the DVW South Plant is located in Delaware. A variety of inorganic chemicals and pesticides were manufactured at the Facility during different periods since it began operation in the very late 1890's. A corporate predecessor of General Chemical Corporation (GCC) acquired part of the Facility from Allied Signal, now Honeywell International Inc. (Honeywell) in 1986. Allied Signal retained ownership of several contiguous parcels of property in the DVW North Plant upon which chemical operations were conducted and continue today, and one inactive parcel known as Solid Waste Management Unit-9 (SWMU-9) in the DVW South Plant. In 2004, Honeywell re-acquired the DVW North Plant from GCC.

In September 2000, EPA issued an Administrative Order to GCC pursuant to Section 3008(h) of the Resource Conservation and Recovery Act (RCRA) (Order) which requires a Facility-wide investigation and cleanup of the former GCC facility in Claymont, DE. The requirements of the Order include:

- Interim Measures/Stabilization, where appropriate, to achieve the initial goal of controlling ground water releases and controlling current human and ecological exposure to contaminated media;
- RCRA Facility Investigation (RFI) if warranted, to provide more in-depth information about Solid Waste Management Units (SWMUs), and;
- Corrective Measures Study (CMS) if warranted, to propose final cleanup actions needed.

In October 2002, GCC and certain of its affiliates filed a voluntary petition in the United States Bankruptcy Court for the District of Delaware for reorganization relief. GCC subsequently emerged from bankruptcy under an approved Reorganization Plan in October 2003. On January 23, 2014, Chemtrade Solutions LLC (Chemtrade) acquired GCC.

## **C. SUMMARY OF ENVIRONMENTAL INVESTIGATIONS**

### **Environmental Investigations**

GCC, with EPA and State oversight, completed a Phase I and Phase II RFI. The RFI included the collection of groundwater and soil samples for 10 SWMUs and 3 Areas of Concern in the South Parcel. The data resulting from these investigations have been used to evaluate and characterize the nature and extent of potential contamination in the South Parcel.

The proposed remedy described in this SB will address the following SWMUs and AOCs:

- SWMU 1 – Former North Phosphoric Acid Pond
- SWMU 2 – South Phosphoric Acid Pond
- SWMU 5 – Former Spar Building Storage Area
- SWMU 6 – South Treatment Plant, Drum Storage
- SMMU 7 – Effluent Clarifier
- SWMU 8 – Effluent Clarifier
- SWMU 10 – South Waste Treatment Storage Pad
- SWMU 26 – South Waste Treatment Plant
- SWMU 35 – Former Hazardous Waste Storage Pad
- SWMU 36 – Former Debris Staging Area/ Alum Plant Area
- AOC 2 – Acid Spill Area
- AOC 4 – Conrail Fuel Soil Area
- AOC 14 – Former Sulfuric Acid Storage Area

## **Soil Assessment at the South Parcel**

Soils data collected during the RFI were evaluated to provide information on the existing and potential future human health risks and impacts to groundwater quality. Soils analytical data were compared to screening criteria including EPA Region III industrial risk screening levels (RSLs) as well as EPA Region III's soil-to-groundwater pathway risk-based soil screening levels (SSLs), Dilution Attenuation Factor = 20.

The primary constituents found in soils above applicable screening criteria at the proposed redevelopment area were limited to arsenic, lead, and benzo(a)pyrene. Several other metals such as antimony, thallium, and chromium were also detected, but were below their respective RSLs and only slightly higher than their respective SSLs.

Isolated detections were also found for several organic compounds, specifically Polyaromatic Hydrocarbons (PAHs) which were detected above screening criteria. These PAHs were all found in the vicinity of SWMU 5 and SWMU 35. Two sample locations contained low levels of Polychlorinated Biphenyls (PCB) slightly above the corresponding RSL or SSL. In addition, low levels of dieldrin were detected in two sample locations slightly above the corresponding SSL values.

The most pervasive levels of arsenic were detected in the SWMU 5 area, ranging in concentration from 7 to 957 mg/kg. Several detections of arsenic were also found in the central portion of the South Parcel that ranged from between 100 to 200 mg/kg. Of the 43 samples analyzed, 16 samples contained arsenic at concentrations ranging from 7 to 100 mg/kg, 21 samples contained arsenic at concentrations ranging from 100 to 500 mg/kg, and 6 samples contained arsenic at concentrations from 500 to 957 mg/kg.

Chemtrade completed a supplemental soil investigation in December 2015 to further assess contamination levels in soils as part of the proposed remedy determination. The investigation detected arsenic at concentrations ranging from 3.6 to 29,000 mg/kg.

Based on the historical operations of the Facility, the primary source of the arsenic found across the South Parcel is likely from historical storage and management of pyritic ores or the placement, storage and/or deposition of pyritic ore cinders as historical fills in these areas. The pyritic ore cinders were generated during the burning of the ore as part of sulfuric acid manufacturing process and are expected to have higher arsenic concentrations than the raw ore.

## **Groundwater**

During the RFI groundwater investigations, contaminant conditions associated with AOCs and SWMUs in the South Parcel were evaluated. With the exception of dissolved arsenic, all of the detected compounds were limited in extent and at low concentrations. However, dissolved arsenic was detected at concentrations ranging from 52 micrograms per liter (ug/L) to 92,000 µg/L.

The distribution of arsenic in groundwater does not appear to be from a release or particular unit, and appears to be associated with the historical fill used to create this ground along the Delaware

River. The RFI investigations show that this large volume of heterogeneous material is in contact with groundwater and is a non-point source of contamination resulting in a continual release of arsenic. The hydraulic conductivity of the fill materials is low, based on well recovery data, resulting in slow groundwater seepage velocities. These factors combine to limit restoration potential over this area, and indicate that cleanup of groundwater appears to be technically impracticable. EPA will issue a separate SB addressing the groundwater at the South Plant to solicit public comment once the South Plant groundwater has been further evaluated under the RCRA Corrective Action Program.

#### **D. CORRECTIVE ACTION OBJECTIVES**

Corrective Action Objectives are goals developed for the protection of human health and environment. EPA's Corrective Action Objectives for the South Parcel are as follows:

##### **Soil**

Prevent all uncontrolled human exposure to contaminated soils that exceed the industrial RSLs and minimize cross-media transfer of contaminants of concern (COCs) from soil to groundwater and surface water to minimize the impact to ecological receptors.

##### **Groundwater**

While this SB does not include a proposed remedy for groundwater and because contaminants remain in the groundwater at the South Parcel, EPA is including a proposed corrective action objective for groundwater to prevent any other unacceptable exposures to impacted groundwater and ensure that groundwater containing elevated concentrations of COCs will not impact ecological receptors nor adjacent surface water bodies

#### **E. PROPOSED REMEDY**

EPA's proposed remedy for the South Parcel is a combination of Engineering and Institutional Controls. The area of the proposed remedy is approximately 22 acres as shown on Figure 1, attached.

##### **1. Engineering Controls**

The proposed remedy for the South Parcel soils is to install and maintain a low permeability cap that controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post remedial action escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere. In addition, the cap shall be designed and constructed to prevent infiltration to mitigate potential cross-media migration (soil to groundwater) of COCs. This cap shall be functionally equivalent to the performance standards documented in 40 CFR Section 265.310.

A Cap Management Plan (CMP) shall be submitted for EPA and the Delaware Department of Natural Resources and Environmental Control (DNREC) review and approval and, at a minimum

must include the following: the procedures to maintain the cap over the contaminated soil; a schedule for inspections to be performed as part of cap maintenance, no less frequent than once a year; physical maintenance requirements of the capped areas to prevent degradation of the cap and unacceptable exposure to the underlying soil.

A Materials Management Plan (MMP) for all earth moving activities, including excavation, drilling and construction activities in the South Plant where any contaminants remain in soils above EPA Region III's Screening Levels for Industrial Soils or in groundwater above their MCLs or EPA Region III's Tap Water Risk Screening Levels shall be submitted for EPA and DNREC review and approval. At a minimum the MMP must specify the following: the protocols for soil and groundwater handling and management and the appropriate Personal Protective Equipment requirements sufficient to meet DNREC acceptable risk and complies with all applicable OSHA requirements in a manner such that the activity will not pose an unacceptable threat to human health and the environment or adversely affect or interfere with the integrity of the final remedy.

## **2. Institutional Controls**

Because contaminants remain in the soil and groundwater at the South Parcel above levels appropriate for residential use, EPA's proposed remedy requires land use restrictions to restrict activities that may result in exposure to those contaminants. EPA proposes that the restrictions be implemented and maintained through institutional controls (ICs). ICs are non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contamination and/or protect the integrity of the remedy by limiting land or resource use.

EPA is proposing the following land and groundwater use restrictions be implemented at the South Parcel:

- a. The South Parcel shall be restricted to commercial and/or industrial purposes and shall not be used for residential purposes unless it is demonstrated to EPA, in consultation with DNREC, that such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected remedy and EPA, in consultation with DNREC, provides prior written approval for such use.
- b. All monitoring, maintenance and inspections of the cap required in Section E.1 of this SB shall be conducted in compliance with an EPA/DNREC approved CMP.
- c. Groundwater at the South Parcel shall not be used for any purpose other than to conduct the operation, maintenance, and monitoring activities required by DNREC and/or EPA, unless it is demonstrated to EPA, that such use will not pose a threat to human health or the environment or adversely affect or interfere with the final remedy and EPA

provides prior written approval for such use and no new wells will be installed on the South Parcel property unless it is demonstrated to EPA that such wells are necessary to implement the final remedy and EPA provides prior written approval to such wells.

- d. Any earth moving activities, including excavation, drilling, and construction activities, in the area at the South Parcel where any contaminants remain in soils above EPA Region III's Screening Levels for Industrial Soils or in groundwater above their MCLs or EPA health based screening level for tap water, shall be conducted in compliance with and EPA/DNREC approved Materials Management Plan (MMP).

The land and groundwater use restrictions necessary to prevent human exposure to contaminants at the South Parcel will be implemented through an order and/or an Environmental Covenant pursuant to the Delaware Uniform Environmental Covenants Act (*7 Del. C. Chapter 79, Subchapter II*).

If EPA determines that additional maintenance and monitoring activities, land use controls, or other corrective actions are necessary to protect human health or the environment, EPA has the authority to require and enforce such additional corrective actions through an enforceable mechanism which may include an order or Environmental Covenant, provided any necessary public participation requirements are met.

## **F. EVALUATION OF PROPOSED REMEDY**

Under the RCRA corrective action program, evaluation criteria for corrective measures are assessed when multiple alternatives are considered for implementation. In lieu of developing media cleanup standards for specific constituents and determining the extent of their application, the proposed remedy provides engineering and institutional controls for the entire South Parcel.

Based on the planned nature of the redevelopment parcel as a rail yard, the proposed remedy, in effect constitutes a proposed remedy and the screening of other alternatives is not being undertaken. However, EPA evaluated the proposed remedy in the context of the seven balancing criteria as follows:

### **Threshold Criteria**

#### Protect Human Health and the Environment

EPA's proposed remedy for the South Parcel protects human health and the environment by eliminating, reducing, or controlling potential unacceptable risk.

With respect to the contaminated soils found at the South Parcel, all exposure pathways over the South Parcel will be eliminated by the design and construction of the cap, which will serve as an

engineered barrier preventing direct contact with the underlying soils. The cap will also be designed to reduce infiltration such that it will minimize cross-media migration (i.e. soil to groundwater) and erosion of the contaminated soils.

With respect to future uses, the proposed remedy requires land and groundwater use restrictions, described in Section E, above, to minimize the potential for human exposure to contamination and protect the integrity of the remedy.

#### Achieve Media Cleanup Objectives

EPA's proposed remedy meets the media cleanup objectives based on assumptions regarding current and reasonably anticipated land and water resource use(s). The remedy proposed in this SB is based on the current and future anticipated land use at the Facility as commercial or industrial. Although the contaminated soils will remain in place, the engineered cap effectively results in a barrier to eliminate direct contact from human and ecological receptors. The cap will also be designed and constructed to control storm runoff and prevent infiltration, eliminating the potential for cross-media migration of contaminants. The institutional controls will ensure long-term effectiveness of the remedy through enforceable monitoring and maintenance requirements.

#### Remediating the Source of Releases

With all proposed remedies, EPA seeks to eliminate or reduce further releases of hazardous wastes and hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the proposed remedy to eliminate or reduce, to the maximum extent practicable, further releases. With the implementation of the engineered cap, EPA's proposed remedy for the South Parcel will meet this objective.

#### **Balancing Criteria**

##### Long Term Effectiveness

The long-term effectiveness criterion considers the amount of risk that would remain after the remedy has been implemented. It also considers whether the remedy is adequate and reliable. Engineered capping of contaminated soils at the South Parcel would provide long term effectiveness by eliminating all direct exposure pathways to soils from human and ecological receptors and preventing cross media (soil to groundwater) migration.

Institutional controls would formally prohibit uncontrolled use of groundwater thereby eliminating future direct exposure potential to groundwater at the proposed redevelopment parcel. The combination engineering controls buttressed by institutional controls will be highly effective over the long term.

### Reduction in Toxicity, Mobility, and Volume through Treatment

This criterion evaluates how effectively treatment is being employed in the remedy to reduce toxicity, mobility and volume of contaminants at the Facility. The proposed cap would be an engineered barrier designed to mitigate the mobility of the constituents contained beneath it, thereby reducing the volume and mass of contaminants at exposure points.

### Short-Term Effectiveness

Short-term effectiveness criterion accounts for the protection of remedial workers, members of the public, and the environment during the implementation of the remedy. The proposed remedy will be highly effective in the short term as it will address the entire South Parcel on an expedited basis. There are no residential communities in the vicinity of the South Parcel; therefore, no short-term hazards to the residents have been identified for the proposed remedy. Workers are required to comply with the Occupational, Safety and Health Administration rules and to follow the Health and Safety Plans and Materials Management Plans submitted to EPA and DNREC.

### Implementability

The implementability criterion considers whether the remedy is practical in the technical and administrative sense, and whether the required services and materials are available. The proposed engineered cap is readily implementable, as are the land and groundwater use restrictions which will be implemented through an enforceable mechanisms such as the Environmental Covenant.

### Cost

This criterion considers the total capital cost, annual operation and maintenance costs, and the present worth of the remedy. The cost of installing and maintaining the engineered cap are reasonable given that it will eliminate all exposure pathways over the South Parcel and reduce infiltration thereby minimizing cross-media migration (i.e. soil to groundwater) and erosion of the contaminated soils. In addition, EPA will require assurances of financial responsibility for completing the final remedy consistent with Section 3004(u) of RCRA, 42 U.S.C. § 6924(u).

### Community Acceptance

Community acceptance will be evaluated after the public comment period of the SB, and public comments will be addressed and documented in the forthcoming Final Decision and Response to Comments (Final Decision).

### State Acceptance

State involvement has been solicited throughout the RCRA corrective action process. DNREC supports the proposed presumptive remedy for the installation of an engineered cap and implementation of institutional controls at the South Parcel. The final concurrence will be solicited from the State following the review of all comments received during the public comment period.

## G. FINANCIAL ASSURANCE

EPA will require financial assurance in the amount of \$500,000 to implement the proposed remedy and long-term maintenance and monitoring.

## H. PUBLIC PARTICIPATION

EPA is providing a 30-day public review and comment period on this document. EPA may modify its proposed remedy based on comments received during this period. EPA will announce its selection of a final remedy for the South Parcel in a document entitled Final Decision after the public comment period has ended.

EPA will address all significant comments received during the public comment period. If EPA determines that new information or public comments warrant a significant modification to the proposed remedy, EPA will modify the proposed remedy or select other alternatives based on such new information and/or public comments and will solicit public comment on its modified proposed remedy. If the final remedy is substantially unchanged from the one proposed, EPA will issue a Final Decision and inform all persons who submitted written comments or requested notice of EPA's final determination.

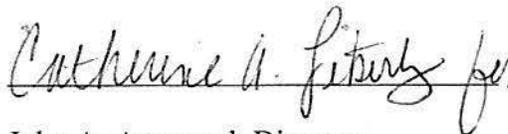
EPA is soliciting input from the community on the proposed remedy for the South Parcel. The comment period extends from March 22, 2016 to April 21, 2016 (30 days). Comments may be submitted by mail, Fax, email, or phone to Mr. Russell Fish at the address listed below.

A public meeting will be held upon request. Requests for public meeting should be made to Mr. Russell Fish at the address listed below. A meeting will not be scheduled unless one is requested.

The Administrative Record contains all the information considered by the EPA for the proposed remedy at the Facility. The Administrative Record is available at the following location:

U.S. EPA Region III  
1650 Arch Street  
Philadelphia, PA 19103  
Contact: Mr. Russell Fish (3LC20)  
Phone: (215) 814-3226  
Fax: (215) 814-3113  
Email: [fish.russell@epa.gov](mailto:fish.russell@epa.gov)

Date: 3-22-16



John A. Armstead, Director  
Land and Chemicals Division  
US EPA, Region III

## **I. INDEX OF ADMINISTRATIVE RECORD**

RCRA Facility Assessment for Delaware Valley Works South Plant, 1986  
Initial Administrative Order General Chemical Corporation, August 30, 2000  
RCRA Facility Investigation Phase I Report, 2003  
RCRA Facility Investigation Phase II Report, 2007  
RFI Summary and Presumptive Remedy for Proposed Industrial Redevelopment Area, February 26, 2016  
Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments, July 1989

### **Attachments**

Figure 1: Facility Location Map

