# Statement of Basis

# MPM Silicones, LLC
# WVD004325353
# Friendly, WV

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## I. Introduction

The United States Environmental Protection Agency ("EPA") has prepared this Statement of Basis ("SB") for the MPM Silicones, LLC chemical manufacturing plant in Friendly, West Virginia (also known as the Sistersville Plant and formerly G. E. Silicones, LLC) ("the Facility"). The purpose of this SB is to explain EPA's proposed remedy to address various Solid Waste Management Units ("SWMUs") at the Facility, to provide a summary of investigation and corrective measures results used in the remedy selection process, and to solicit public comments on the proposed remedy prior to EPA making its final decision.

With this SB, EPA is proposing to remediate groundwater contamination at the Facility by continuing to operate the current groundwater recovery system, and by following a monitoring, inspection, and sampling schedule, which may be followed by additional corrective measures, if necessary.

The final remedy will be described in a Final Decision and Response to Comments. EPA anticipates having the final remedy implemented through a new permit to be issued by the West Virginia Department of Environmental Protection ("WVDEP").

## II. Facility Background

Based on information provided in a Resource Conservation and Recovery Act ("RCRA") Part B permit application to the State of West Virginia, EPA Region III issued a RCRA Corrective Action Permit ("CAP") to the Union Carbide Corporation ("UCC") to operate a hazardous waste treatment, storage, and disposal facility in Friendly, WV. The CAP was issued on December 17, 1990. The permit required a Verification Investigation ("VI"), a RCRA Facility Investigation ("RFI") and, if needed, a Corrective Measures Study ("CMS") for several SWMUs at the Facility. The EPA-issued CAP comprises a portion of the Facility's full RCRA permit. The other portion of the permit was issued by the WVDEP and addressed the provisions of RCRA for which the State of West Virginia was authorized as of 1990.

The Facility changed ownership from UCC to OSi Specialties, Incorporated ("OSi") in 1993. OSi was purchased by Witco Corporation in 1995. On September 1, 1999, Witco Corporation and Crompton & Knowles ("C&K") merged to form CK Witco Corporation, which underwent a name change to Crompton Corporation on April 27, 2000. On July 31, 2003, Crompton Corporation sold the Facility to GE Silicones WV, LLC, which was merged into GE Silicones, LLC on August 1, 2004.

On December 4, 2006, GE Silicones, LLC was renamed to Momentive Performance Materials, also known as MPM Silicones, LLC. MPM Silicones, LLC maintains all of GE Silicones, LLC's former responsibilities and obligations under all governmental orders, permits, authorizations and licenses in connection with the operation of the Facility.

The CAP was last modified on September 24, 1997 ("CAP Modification"), and specific corrective actions and monitoring requirements were added. A timely renewal application for the RCRA Part B permit was submitted to the West Virginia Department of Environmental Protection ("WVDEP"). Maria Parisi Vickers, Assistant Director for RCRA, Waste and Chemicals Management Division, EPA Region III, granted a continuance of the current CAP by letter dated November 14, 2002 to Mr. David R. Sands of Crompton Corporation (now Chemtura Corporation) until a new CAP was issued by EPA. In 2003, the State of West Virginia was authorized by EPA to administer the RCRA corrective action program. As a result, a new CAP will not be issued by EPA. Instead, WVDEP will issue a new full RCRA permit that will include implementation of the final remedy and all corrective action requirements.

Facility Location

The Facility is a chemical manufacturing plant near Friendly, Tyler County, West Virginia, where production wastes are generated, stored, and treated. The Facility is located adjacent to WV State Route 2, approximately 2.6 miles south of Friendly, West Virginia. The Ohio River is approximately 1,000 feet west of the Facility entrance. Sugarcamp Run, an intermittent waterway, flows in a westward direction across the north-central portion of the Facility and discharges into the Ohio River. The Facility location is shown on the United States Geological Survey ("USGS") Bens Run, West Virginia – Ohio quadrangle in Figure 1, located in the Appendix to this SB.

The SWMUs identified in the CAP are as follows:

- North Inactive Site
- Copper Sludge Pit and Storage Pile
- Platinum Filter Cake
- South Inactive Waste Site
- No. 3 Sludge Pond (Settling Basin)
- Waste Water Treatment System
- Waste Drum Staging Areas
- Copper Shanty

The Copper Sludge Pit and Storage Pile and the Platinum Filter Cake areas are located within the North Inactive Site. The three areas are collectively called the North Inactive Site ("NIS") for the purposes of investigation. The Waste Drum Staging Areas consisted of various hazardous waste drum storage locations throughout the Facility. The Waste Water Treatment System consists of the treatment tanks, underground process sewers, and sediments deposited in Sugarcamp Run. During the closure of a wastewater impoundment, an additional SWMU was identified and was named the BTEX Area. The BTEX Area was then included in the RFI activities for the North Inactive Site and the VI for the South Inactive Site. The SWMU locations are shown in Figures 2 through 4, located in the Appendix to this SB.

SWMU Descriptions

North Inactive Site (includes Copper Sludge Pit and Storage Pile, and Platinum Filter Cake Area)

The NIS (which is also referred to as the North Forty, or NF, Site) encompasses approximately 5.5 acres of grassy terrain north-northwest of the rotary kiln incinerator. Within this area, approximately 2.2 acres is comprised of fill material. The depth of the fill is estimated to be 20 feet. The western edge of the NIS falls just within the 100-year floodplain.

The NIS was used to store and dispose of a variety of solid and liquid wastes from 1961 to 1972. An estimated 7,000 drums were buried at the NIS. In addition to the drum burial, some drums were stored on the surface of the NIS until 1981.

Wastes placed in the NIS include:

- Silicone gums
- Chlorosilanes
- Toluene solutions
- Acrylonitrile
- Gelled methyl silicones

- Distillation column pot residues
- Cyanoethyltriethoxysilane heavies
- Surfactant production filter cakes

Other miscellaneous wastes may have included substances such as raw materials, off-specification products, and heat transfer fluids.

The Copper Sludge Pit and Storage Pile ("CSP") were located within the boundaries of the NIS. This pit was shallow and 75 feet in diameter. In 1970, operations began in the pit which separated liquid from copper containing spent mass and copper hydroxide sludges. The material was placed in the pit and the sludge settled to the bottom. The sludge was removed and dried in a pile adjacent to the basin. The dried sludge was then transported off-site for metal reclamation. Use of the pit was halted in August 1981 and all remaining sludge was removed by April 1982.

The Platinum Filter Cake Disposal Area ("PFCD") was also located within the boundaries of the NIS. Filtercake containing platinum was stored in an approximate 100-square foot area on the surface of the NIS prior to being shipped off-site for precious metal recovery. The cake was stored in plastic or cardboard boxes on skids at the western edge of the NIS. Storage of the filter cake occurred from 1970 to 1982. The material remaining on-site in 1982 was then placed in the Facility's on-site landfill #1, which is now closed.

A geophysical survey, consisting of a magnetometer survey, EM-31 conductivity survey, and resistivity soundings, was performed by Law Environmental, Incorporated to delineate the boundary of the NIS.

South Inactive Waste Site

The South Inactive Waste Site ("SIS") encompasses a forested area of less than one acre and is located at the southern end of the Facility property. Approximately 400 drums of waste were disposed in this area in the early 1950s. Materials include chlorosilanes, silicone oils and resins, and spent copper-silicon mass. Materials were buried within the SIS at a depth of approximately 10 feet. An electromagnetic field screening was conducted to locate the buried waste.

No. 3 Sludge Pond

The No. 3 Sludge Pond was a 450,000-gallon settling basin which was closed in April 1986. The pond received neutralized wastewater from the methyl hydrolyzate pond. It was also used to settle copper hydroxide generated from a non-hazardous wastewater stream from the treatment of water in the Copper Zinc Neutralizer. Closure activities included removal of all waste sludge and disposal of the sludge in the Facility's #2 landfill. Clay was then placed in the pond and compacted in lifts to form a stable base for future use. Crushed stone and a concrete pad have been placed on top of the clay fill.

On February 25, 1993, WVDEP issued a letter to the Facility approving the closure certification of the Copper/Zinc Unit, consisting of the No. 3 Sludge Pond and the Copper Zinc Neutralizer.

Waste Water Treatment System ("WWTS")

The WWTS consists of treatment tanks, sediments deposited in Sugarcamp Run, and the Facility sewer system.

The two UNOX™ biological wastewater treatment reactors are 555,000-gallon concrete vessels fitted with steel covers. The primary treatment system tanks include one 15,000-gallon 2-stage neutralization pit and a primary clarifier with two 185,000-gallon tanks. This equipment is still in use.

The process sewer system, put in operation around 1970, and still in use today, is made of vitrified clay tile and collects process wastewater generated by Facility operations. The system extends in a matrixed fashion for approximately 41,000 feet through the Facility. The process sewer system is isolated from the clean sewer system, which collects storm water runoff and other non-contaminated waters from the Facility.

The sediments evaluated in Sugarcamp Run were from the discharge of the former WWTS. Sugarcamp Run is a shallow natural stream that ranges in width from fifteen feet at the Facility's former treated wastewater discharge point to an estimated 30 feet at the mouth where it enters the Ohio River. The solids deposition at the mouth of the Ohio River tributary has been influenced by backwater created from pooling caused by the Willow Island Dam, located below the Facility. The dam began operation in the mid-1970s, which coincided with the initial operation of the Facility's WWTS. The rush of storm water run-off regularly scours portions of the streambed that were nearest the former WWTS discharge point. The outlet has since been rerouted to discharge directly to the Ohio River.

Waste Drum Staging Areas

The Verification Investigation Work Plan identified 11 areas where hazardous waste drums were stored as follows.

- Plant Lab
- Research and Development (R&D)
- Demolition & Construction
- Poly 2
- NPD
- Poly 1
- Distribution
- Silanes CNT
- Silanes Esters
- Silanes Monomer and Intermediates
- Maintenance

The drum pads were sized to accommodate from four to ten pallets.

Copper Shanty

The Shanty consisted of a 5,000-gallon in-ground concrete tank. It was used to hydrolyze wastes from methylchlorosilane and trichlorosilane production. The wastes were reacted to release silicon hydrolyzate and hydrogen chloride. The operation began in 1975 and ended in 1987.

BTEX Area

During closure of an interim status surface impoundment in the Environmental Protection Area (an area of the Facility containing the offices of the environmental staff, the WWTS, and the wastes incinerator) just southwest of the NIS, discolored soils were discovered beneath the clay liner. The material reportedly had an odor similar to diesel fuel or gasoline and was therefore referred as the BTEX area.

BTEX is the term commonly used for contamination that contains the petroleum associated compounds of benzene, toluene, ethylbenzene, and xylene. Additional test holes encountered discolored soils. Soils were excavated and a composite sample of the excavated soil detected benzene and toluene. The West Virginia Department of Natural Resources ("WVDNR"), now WVDEP, was notified. No additional measures were required and WVDNR approved the closure of the surface impoundment as complete on November 8, 1989.

To determine the extent of any impact to groundwater, analysis of select existing monitoring wells was completed. Constituents detected in groundwater samples (1,1 Dichloroethane, BTEX, chloromethane, chlorobenzene, copper, and arsenic) indicate that the BTEX contaminated soils that were excavated from beneath the clay liner of the impoundment were the most probable source.

Soil borings were also installed to define the vertical and horizontal extent of soil contamination, if present. Samples were analyzed for BTEX, copper, zinc, and arsenic. Only xylene was detected (21,000 mg/Kg) at a level slightly above the EPA Region III Risk Based Concentrations ("RBC") for industrial soil (20,000 mg/Kg) in one soil boring at a depth of 16 to 18 feet bgs. The EPA Region III Risk Based Concentrations are concentrations of certain constituents that are used for screening purposes by risk assessors to identify potential contaminants of concern in the environment.

Groundwater contour maps indicate that groundwater from this area flows southwest to the groundwater recovery well (#4315) and is treated by the Facility's waste water treatment system.

Local Geology

The Friendly area of the Ohio River Valley lies entirely within the Appalachian Plateau physiographic province. The area is highly dissected because of stream erosion into a succession of ridges separated by narrow valleys. Ridges range from 800 to 1,100 feet above mean sea level ("MSL").

The Facility is located on a plain between the Ohio River to the west and hills to the east. The majority of the Facility is above the 100-year flood plain elevation of 630 feet MSL. All of the SWMUs, with the exception of the western edge of the NIS and the wastewater treatment primary clarifiers and waste treatment tanks, are above the 100-year flood elevation.

The geology ranges from fine to medium sand with some silt and gravel at the north end of the Facility to clay at the south end. Depths to bedrock vary from 45 to 80 feet below ground surface (bgs).

Local Hydrogeology

The presence of groundwater has been well documented by water level measurements obtained from the monitoring wells at the Facility. The groundwater level in the floodplain area of the Facility appears to be controlled by the elevation of the river and fluctuates directly with the river. The slope of the bedrock, seasonal rainfall, and permeability of the in-situ soils control the water levels along the eastern border of the Facility.

Process water supply is derived from three Ranney Wells, identified as Ranney Wells Nos. 2, 3, and 4, located adjacent to the Ohio River near the central and southern portions of the Facility. Large turbine-style pumps are located at the base of the caissons. Water is pumped, on average, at 5,500 gallons per minute ("gpm").

In December 1994, a Comprehensive Hydrogeologic Study was conducted as part of the Continued Measures Survey/Stabilization Proposal submitted to the EPA. The study shows that the large withdrawal quantities from the Ranney Wells and from a groundwater recovery well (discussed later in this SB) affect the groundwater gradient at the Facility. Significant cones of depression surround these wells.

In general, groundwater flows from the northeast to the southwest. The study concluded that the alluvial aquifer is derived from four primary sources. The primary quantity is from areas along the eastern border where the alluvial sediments are in direct contact with near-surface fractures of the bedrock underlying the hillside. A relatively broad area of increased groundwater gradient occurs where the valley of Sugarcamp Run enters the alluvial plain. This would indicate this area to represent the largest quantity of near-surface fracture type recharge. Recharge also occurs from the alluvial aquifer to the north via intergranual flow. The depressions created by the Ranney Wells No.2 and No.3 cause a large quantity of the aquifer recharge to also be derived from the Ohio River.

## III. Previous Investigations

North Inactive Site

On January 17, 1992, the RFI Workplan for the NIS was approved by EPA. The investigation was concluded in June 1992, and the Final RFI Report was submitted to EPA on August 28, 1992. As previously noted, the Copper Sludge Pit and Platinum Filter Cake Area were included in this investigation.

Data from existing monitoring wells in the vicinity of the NIS indicated that a release to the alluvial aquifer had occurred. In order to define the nature and extent of the release, eight additional monitoring wells were installed. The new wells were installed in pairs at four locations with one well screened in the alluvial aquifer and one screened in the bedrock. Groundwater samples were collected from the new (4210 to 4215, 4316, and 4317) and existing (NF-1 to NF-9) wells, and were analyzed for volatile organics, semi-volatile organics, metals, cyanide, sulfide, nitrates, and silicon. Monitoring well locations are shown in Figure 5. Constituents observed were chlorobenzene, benzene, toluene, ethylbenzene, xylenes, chloromethane, methylphenol, 1,1-dichloroethane, 1,2-dichloroethene, nickel, arsenic, zinc, and copper. Previous sampling of wells downgradient of the NIS also revealed the presence of isopropyl ether and trimethylsilanol.

In order to determine whether the alluvial aquifer and the bedrock aquifer were connected, piezometers were installed into the bedrock and data was collected. The hydraulic conductivity of the bedrock aquifer was three orders of magnitude smaller than that of the alluvial aquifer, and there was an approximately 12 inch difference in water level between the two aquifers. No NIS related constituents were detected in the bedrock aquifer. Chloride and sodium, which are naturally occurring constituents, were present at different concentrations in the aquifers. Based on the results of the RFI and a 1994 Comprehensive Groundwater Study completed by Triad Engineering at the Facility, there does not appear to be communication between the bedrock aquifer and the alluvial aquifer in the vicinity of the site.

Surface water and sediment sampling was conducted to determine if any releases from the NIS were impacting Sugarcamp Run. Three samples were obtained – one upstream, one adjacent to, and one downstream of the NIS. Very little variation was evident in the comparison of the surface water analytical results of the upstream sample point with those of the other two samples. Levels of constituents (primarily copper and zinc) expected to be present in NIS runoff were higher in sediment samples from the two downgradient points compared to the upstream sample.

Groundwater in the vicinity of the NIS is routinely monitored. Initially, chlorobenzene was detected at levels above the maximum contaminant level (MCL) of 100 ug/L established by EPA pursuant to the Safe Drinking Water Act, 42 U.S.C. s/s 300f et seq. (1974). Levels have decreased over time and since 2002 have been below the MCL. Table 1 shows the most recent data for the wells associated with the NIS.

Table 1: NIS Wells Groundwater Analysis (ug/L)

| Parameter | NF-1 | NF-2 | NF-3 | NF-4 | NF-5 | NF-6 | NF-7 | NF-8 | NF-9 | AL |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5.0 [a,c] |
| Toluene* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1000 [a,c] |
| Ethylbenzene* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 700 [a,c] |
| Xylene* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 10000 [a,c] |
| Chlorobenzene* | ND | ND | ND | ND | ND | ND | ND | 68.6 | ND | 100 [a] |
| Methyl Chloride* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.5 [d] |
| Dichloroethylene (cis-1,2)* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 70 [a,c] |
| Dichloroethylene (trans-1,2)* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 100 [a,c] |
| Acrylonitrile* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.038 [d,e] |
| Isopropyl Ether* | ND | 894 | ND | 1240 | 226 | ND | 2340 | 566 | ND | NE |
| 1,1,1-Trichloroethane* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 200 [a,c] |
| 1,2-Dichloroethane* | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5.0 [a,c] |
| 1,1-Dichloroethane* | ND | ND | ND | ND | ND | ND | ND | 16 | ND | 810 [d] |
| Dichlorodifluoromethane** | ND | ND | ND | ND | ND | 3.5 | ND | 12 | 22 | 390 [d] |
| Copper* | NA | ND | ND | ND | ND | 40 | ND | 570 | 10 | 1000 [b] |
| Zinc* | NA | 10 | ND | ND | 10 | 10 | 10 | 50 | 20 | 5000 [b] |
| Barium** | NA | 131 | 50.2 | 75.4 | 5.5 | 40.5 | 90.2 | 78.6 | 50.7 | 2000 [a,c] |
| Cobalt** | NA | 8.9 | 6.7 | 11.2 | 5.6 | ND | ND | 16.6 | ND | 2200 [d] |
| Nickel** | NA | ND | ND | ND | 19.4 | ND | ND | 13.1 | ND | 100 [c] |
| Tin** | NA | ND | ND | 5.3 | ND | ND | ND | 6.8 | ND | 22000 [d,e] |

AL Action Level
ND Not Detected above the minimum detection limit
NE None Established
Not analyzed
ᵀ Analyzed November 14, 2006
** Analyzed May 19, 2003
[a] National Primary Drinking Water Regulations, 40 CFR, Sec. 141.61 and 141.62
[b] National Secondary Drinking Water Regulations, 40 CFR, Sec.143.3 Secondary maximum contaminant levels.
[c] 46 WVCSR 12 - Groundwater Protection Rule
[d] 60 WVCSR 3 Table 3B Risk Based Concentrations for Groundwater June 2001
[e] USEPA Region III Risk Based Concentration for Tap Water October 2006

Wells 4210 through 4215 are not included in the above table because they are discussed later in this SB in the section that addresses the BTEX Area identified during the NIS RFI. Wells 4316 and 4317 are not included in the table because they were abandoned after the NIS investigation. They did not show any contamination and were not necessary for future monitoring.

South Inactive Waste Site ("SIS")

A VI for the remaining SWMUs was approved by EPA on April 20, 1992. The investigation was completed in July 1992 and the VI Report was submitted to EPA in October 1992. Wastes were originally thought to be located in three specific trenches about 40 feet by 15 feet in size. Soil and surface water samples were collected from the trenches. No metals or organic compounds were present above the method detection limits in any of the surface water samples. In the soil, various metals and four organic compounds were detected. Toluene was detected in one sample at 19 ug/Kg. Xylene was detected in three samples ranging from18 ug/Kg to 25 ug/Kg. Di-n-octyl phthalate was detected in two samples at 1.0 mg/Kg and bis-(2-ethyl hexyl) phthalate was detected in six samples ranging from 0.44 mg/Kg to 1.1 mg/Kg.

The VI revealed that the wastes were not disposed in the three trenches originally believed to be the location of the SIS. An electromagnetic field screening was conducted to locate the buried waste. Results from this survey and historical file information were used to select sites for the installation of three test pits. All three test pits encountered buried waste and/or drums. Soil samples taken from the three pits showed the presence of methylene chloride, benzene, toluene, xylenes, tetrachloroethene, naphthalene, and a variety of metals. Based on these results, EPA determined that an RFI was required.

An RFI was submitted to EPA in May 1994. On July 26, 1994, a geophysical survey was completed to delineate both the vertical and horizontal limits of waste disposal at the SIS. Five monitoring wells were installed around the buried waste: one upgradient, one cross-gradient, and three downgradient. Soil samples were collected from the drainage swales in the area and from the borings used for groundwater monitoring well installations. Well and drainage swale locations are shown in Figure 6. The final RFI Report was submitted in December 1994.

No contaminants were detected in the samples obtained from the drainage swales. Benzene was the only organic analyte detected in the soil boring sample from 5704 14'-16' bgs at 25 micrograms per kilogram ("ug/Kg"). Metals were detected in similar concentrations from both upgradient and downgradient soil boring samples as shown in Table 2:

Table 2: SIS RFI Metal Results (mg/kg) 1994

| Parameter | 5701 14'-16' (up) | 5702 20'-22' (down) | 5703 16'-18' (down) | 5704 14'-16' (down) | 5705 14'-16' (cross) |
|---|---|---|---|---|---|
| Arsenic | 15 | 19 | 30 | 7.4 | 10 |
| Barium | 190 | 81 | 140 | 85 | 51 |
| Cadmium | 0.9 | 1 | 1.4 | 1.1 | 0.9 |
| Chromium | 9 | 15 | 21 | 11 | 10 |
| Copper | 16 | 20 | 26 | 11 | 12 |
| Lead | 19 | 21 | 24 | 11 | 7 |
| Vanadium | 8.3 | 25 | 34 | 18 | 13 |
| Zinc | 40 | 48 | 64 | 37 | 39 |

mg/kg - milligrams per kilogram

Groundwater analysis detected methylene chloride at 6 ug/L in MW-5701, acetone at 110 ug/L in MW-5704, and chloroform at 11 ug/L in MW-5704.

Groundwater at the SIS is sampled quarterly in accordance with the 1997 CAP Modification. Table 3 shows the most recent groundwater data for the wells associated with the SIS. Benzene, dichloroethylene (cis-1,2), and isopropyl ether have been historically observed in MW-5704. Only benzene has been observed in concentrations greater than its respective MCL established for drinking water under the Safe Drinking Water Act. Wells 4601, 2701, and 1601 are located downgradient of the SIS and have historically been free of organic contaminants. In addition, the groundwater flowpath from the SIS is intercepted by Ranney Wells No.3 and No.4 and sent back to the Facility for process water use and is eventually treated in the Facility's waste water treatment system.

Table 3: SIS Wells Groundwater Analysis (ug/L)

| Parameter | 5701 | 5702 | 5703 | 5704 | 5705 | AL |
|---|---|---|---|---|---|---|
| Benzene* | ND | ND | ND | ND | ND | 5.0 [a,c] |
| Toluene* | ND | ND | ND | ND | ND | 1000 [a,c] |
| Ethylbenzene* | ND | ND | ND | ND | ND | 700 [a,c] |
| Xylene* | ND | ND | ND | ND | ND | 10000 [a,c] |
| Chlorobenzene* | ND | ND | ND | ND | ND | 100 [a] |
| Methyl Chloride* | ND | ND | ND | ND | ND | 1.5 [d] |
| Dichloroethylene (cis-1,2)* | ND | ND | ND | 5.8 | ND | 70 [a,c] |
| Dichloroethylene (trans-1,2)* | ND | ND | ND | ND | ND | 100 [a,c] |
| Acrylonitrile* | ND | ND | ND | ND | ND | 0.038 [d,e] |
| Isopropyl Ether* | ND | ND | ND | 988 | ND | NE |
| 1,1,1-Trichloroethane* | ND | ND | ND | ND | ND | 200 [a,c] |
| 1,2-Dichloroethane* | ND | ND | ND | ND | ND | 5.0 [a,c] |
| 1,1-Dichloroethane* | ND | ND | ND | ND | ND | 810 [d] |
| Copper * | ND | 50 | ND | 10 | ND | 1000 [b] |
| Zinc* | ND | ND | ND | ND | ND | 5000 [b] |
| Barium** | NA | NA | 80.8 | NA | 62.9 | 2000 [a,c] |
| Arsenic** | NA | NA | ND | NA | ND | 10 [a,c] |

AL Action Level
ND Not Detected above the minimum detection limit
NE None Established
NA Not analyzed
* Analyzed March 13, 2007
** Analyzed May 19, 2003
[a] National Primary Drinking Water Regulations, 40 CFR, Parts 141.61 and 141.62
[b] National Secondary Drinking Water Regulations 40 CFR, Sec.143.3 Secondary maximum contaminant levels
[c] 46 WVCSR 12 - Groundwater Protection Rule

[d] 60 WVCSR 3 Table 3B Risk Based Concentrations for Groundwater June, 2001

[e] USEPA Region III Risk Based Concentration for Tap Water October 2006

Waste Water Treatment System ("WWTS")

During the VI, four sediment samples were collected from Sugarcamp Run, two downstream of the WWTS outfall at that time and two downstream of the clean skimmer basin. Samples showed the presence of metals and volatile organics. Semi-volatile organics were below minimum detection limits ("MDL"). Organic constituents observed were acetone, benzene, xylenes, fluoranthene, pyrene, chloroethane, and toluene. Sample locations and results are shown in Figure 7.

Three surface water and three sediments samples were also collected during the RFI for the NIS conducted in 1992. No organic constituents were detected above the MDL for any of the samples. Figure 8 shows the sample locations.

The RFI for the NIS did not include analyses for PCBs of the sediments and soil samples collected from Sugarcamp Run. Three additional samples were collected (two downgradient and one upgradient of the NIS). Aroclor 1248 was detected in one of the downgradient water samples at 2 ug/L. Aroclor 1242 was detected in both of the down gradient sediment samples at 3.6 mg/Kg and 4.3 mg/Kg. The regulatory standard for PCBs in low occupancy industrial areas, as defined in 40 CFR 763.1, is 25 mg/Kg (see 40 CFR, Sec. 761.61 (a)(4)(i)(B).) The low occupancy area definition includes any area where PCB remediation waste has been disposed of on-site, and where the occupancy for any individual not wearing dermal and respiratory protection for a calendar year is less than an average of 16.8 hours per week for nonporous surfaces and less than an average of 6.7 hours per week for bulk remediation waste. The occupancy of the two areas where the investigation was conducted conforms to this low occupancy definition. There are no designated work activities, and there is no storage, maintenance, or other support activity that occurs in the area where the Sugarcamp Run sediment samples were collected.

The VI Workplan proposed hydrostatic tests on the process sewer system in order to evaluate the integrity of the system and its potential for subsurface releases. As the Facility began planning for these tests, it was determined that hydrostatic testing was technically infeasible. The testing could not be conducted during the VI because of the physical design of the sewer system and safety concerns for the workers. The process sewer system and the WWTS treatment tanks were included in the RFI.

The WWTS concrete units are inspected daily. If small cracks are noted, they are repaired immediately. The UNOX™ reactors are inspected every other year. The primary clarifiers are taken out of service, cleaned, and inspected at least once per year. The terminal manhole/neutralization pit is inspected during the plant-wide electrical shutdown that occurs every two to three years.

The main trunk of the process sewer system is inspected through camera surveys during the plant-wide electrical shutdown that occurs every two to three years. An evaluation of the structural integrity of the process sewer system was implemented during the RFI. A phased camera survey was initiated on September 23, 1993. Eleven hundred (1,100) lineal feet of the main trunk were evaluated during the RFI. Sections of at least 1,000 lineal feet have been camera surveyed during each plantwide electrical shutdown since the RFI was initiated.

By 2002, the entire length of the main trunk had been surveyed. The process restarted during the shutdown in 2005. The surveys confirmed that the sewer is structurally sound and no major breaches have occurred. Minor breaches discovered were immediately repaired.

Waste Drum Staging Areas

The VI was conducted on four of the eleven waste drum staging areas identified in the VI Work Plan. Seven of the locations were excluded because releases were highly improbable from the protected concrete pads of which they were constructed. The areas investigated were the Main Lab, Demolition and Construction, Small Scale Production (now known as Specialties East), and Maintenance and Contractors. Soil samples were collected from each of the areas and analyzed for metals and organics. All detected levels were below applicable action levels, therefore, these areas were not included in the RFI.

*Main Lab Area*

The Main Lab area, shown in Figure 9, is a 29' x 6' asphalt pad located east of the laboratory building. Examination of the pad revealed small cracks. Drums containing waste solvents and five-gallon buckets containing bottles of lab samples are stored on the pad. Three samples were collected at a depth of 1 to 2 feet. Analysis showed levels of ethylbenzene from one sample at 34 ug/kg, toluene at 4,800 ug/kg, and xylenes at 120 ug/kg. All levels are below Risk Based Concentrations (RBC Table October 2006) set by EPA Region III for industrial facilities.

*Demolition and Construction Area*

The Demolition and Construction storage pad, shown in Figure 10, is a 14' x 10' concrete pad in good condition at the south end of the Facility. The pad is diked on three sides and slopes toward the drain that is located at the back of the pad. An awning covers the area and adjacent areas are graveled. The pad contains waste solvents and paint wastes. Two samples were collected from each side of the drain. The samples had maximum levels of arsenic at 12 mg/kg, barium at 90 mg/kg, chromium at 26 mg/kg, copper at 17 mg/kg, and lead at 17 mg/kg. No organic constituents were detected in the samples.

Arsenic was the only compound detected at levels above EPA Region III RBC levels, however, background sampling at the Facility and published data for native West Virginia soils (Shacklette & Boerngen) indicate that the level of arsenic detected at the Demolition and Construction Area is attributable to naturally occurring arsenic. No sources of arsenic have been stored on this pad.

*Specialties East*

A 39' x 23' concrete pad diked on three sides and sloped toward a drain in the center of the pad is located at Specialties East. The front of the pad is also sloped toward the drain. Small cracks were noted during the VI. Ignitable wastes, reactive wastes, and waste solvents are stored on this pad. One sample was collected from the north side of the pad at a depth of three feet. The other sample was collected adjacent to a buried 4-inch diameter pipe coming from under the pad. Methylene chloride was the only constituent detected at 7 ug/kg in both samples. Sampling locations are shown in Figure 11.

*Maintenance and Contractors' Area*

The Maintenance and Contractors' storage pad is 20' x 20' and constructed of concrete. It is diked on all four sides and slopes to a drain. Ignitable wastes, waste solvents, and paint wastes are stored on this pad. The present pad was constructed in 1989. Prior to then, the wastes were stored on the gravel and grass. One sample was collected from each side of the pad. Each sample contained various inorganic constituents. Two samples contained toluene at 8 ug/kg and 25 ug/kg and one sample contained methylene chloride at 6 ug/kg. Figure 12 shows the sampling locations and results.

Again, the levels of arsenic detected are indicative of naturally occurring arsenic in soils at the Facility and throughout West Virginia.

Based on the soil sampling results, further investigation or corrective action was not recommended.

Copper Shanty

Eight soil samples, two at varying depths, were collected on each side of the rectangular Copper Shanty. The samples were analyzed for metals. The deeper samples were also analyzed for methyl chloride, dichloromethane, and vinyl chloride. No organic constituents were detected. Metals were detected in all eight samples. Figure 13 shows the sample locations and results.

The only compound detected at concentrations greater than RBC levels was arsenic, which was detected at levels indicative of naturally occurring arsenic in soils at the Facility and throughout West Virginia. No further investigation or corrective action was recommended.

No.3 Sludge Pond

To maintain the integrity of the closed sludge pond, no invasive sampling was conducted as part of the VI. A new, deep groundwater monitoring well (4209) was installed immediately downgradient of the No.3 Pond. This well and existing wells 13A and 14 were sampled. Samples were analyzed for volatile organics, semi-volatile organics, and metals. Arsenic was detected in MW-13A at 20 ug/L unfiltered and 60 ug/L filtered. Adjacent upgradient wells 4212, 4213, and 4215, which were sampled during the RFI for the NIS, had arsenic concentrations of 30 ug/L, 40 ug/L, and 10 ug/L, respectively. Copper was detected in MW-14 and MW-4209 at 70 ug/L and 310 ug/L, respectively, unfiltered, and in MW-14 at 80 ug/L filtered.

The No. 3 Pond was included in the RFI to confirm or confute the arsenic impact to groundwater and the extent of migration. Five upgradient (4210, 4211, NF-9, NF-6, and NF-8), four downgradient (4209, 14, 13A, and 21), and two cross gradient (4212 and 4213) wells in the vicinity of the No.3 Pond were sampled. Arsenic levels were observed in two of the downgradient wells, both of the cross gradient wells, and two of the upgradient wells. The highest level was observed in the cross gradient well MW-4212 at 0.15 mg/L. Detected values in the upgradient wells were 0.012 mg/L and 0.016 mg/L total arsenic. Monitoring well locations are shown in Figure 14.

Historical data from plant sampling events revealed no pattern or trend indicative of a source of arsenic contamination on the Facility. The arsenic levels in MW-4212 appear to be naturally occurring. Groundwater from the area of the No.3 sludge pond flows toward the groundwater recovery well and is treated by the Facility's waste water treatment system.

Soil samples were also collected from borings near No.3 Pond. The sample from close to MW-4212 showed levels of arsenic of 3.7 milligrams per kilograms (mg/kg) at 16-18 feet bgs and 7.3 mg/kg at 30-

32 feet bgs. The concentrations are lower than the concentrations detected at the SIS in the background sample, which had a concentration of 15 mg/kg.

Groundwater downgradient of the No.3 Sludge Pond is sampled quarterly. Table 4 shows the most recent groundwater data in the vicinity of the No.3 Sludge Pond.

BTEX Area

Eight monitoring wells (4212, 4213, 21, 12A, 13A, NF-5A, 4214, and 4215) were sampled during the RFI for the NIS. Well locations are provided in Figure 14. Benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in MW-4212 and benzene was detected in MW-4213. MW-4212 and MW-4213 were sampled again during the VI. The repeat sampling of these wells during the VI showed the presence of BTEX and copper confirming the findings of the RFI for the NIS. Of the constituents observed during the VI, only benzene was present at levels above the MCL.

Table 4: #3 Sludge Pond and BTEX Area Groundwater Analysis (ug/L)

| Parameter | 12*** | 13A*** | 14*** | 21*** | NF-5A* | 4210** | 4212** | 4215** | AL |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ND | ND | ND | ND | ND | 46 | ND | 5.0 [a,c] |
| Toluene | ND | ND | ND | ND | ND | ND | ND | ND | 1000 [a,c] |
| Ethylbenzene | ND | ND | ND | ND | ND | ND | 64 | ND | 700 [a,c] |
| Xylene | ND | ND | ND | ND | ND | ND | 19.1 | ND | 10000 [a,c] |
| Chlorobenzene | ND | ND | ND | 7.3 | ND | ND | ND | ND | 100 [a] |
| Methyl Chloride | ND | ND | ND | ND | ND | ND | ND | ND | 1.5 [d] |
| Dichloroethylene (cis-1,2) | ND | ND | ND | ND | ND | ND | ND | ND | 70 [a,c] |
| Dichloroethylene (trans-1,2) | ND | ND | ND | ND | ND | ND | ND | ND | 100 [a,c] |
| Acrylonitrile | ND | ND | ND | ND | ND | ND | ND | ND | 0.038 [d,e] |
| Isopropyl Ether | 414 | ND | ND | 402 | 226 | ND | 1000 | 810 | NE |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | 200 [a,c] |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | 5.0 [a,c] |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | ND | ND | 1.8 | 810 [d] |
| Tetrachloroethene** | NA | ND | NA | NA | ND | 3.8 | ND | ND | 5 [a,c] |
| Naphthalene** | NA | ND | NA | NA | ND | ND | 84 | ND | 6.2 [d,e] |
| Arsenic** | NA | 16 | NA | NA | ND | ND | 1500 | ND | 10 [a,c] |
| Copper | NA | NA | NA | NA | ND | ND | 182 | ND | 1000 [b] |
| Zinc | NA | NA | NA | NA | 10 | 18.2 | 823 | ND | 5000 [b] |
| Barium** | NA | 44.9 | NA | NA | 5.5 | 29.3 | 51.1 | 52.8 | 2000 [a,c] |
| Cobalt** | NA | ND | NA | NA | 5.6 | ND | 176 | ND | 2200 [d] |
| Nickel** | NA | ND | NA | NA | 19.4 | ND | 299 | ND | 100 [c] |
| Tin** | NA | ND | NA | NA | ND | ND | ND | ND | 22000 [d,e] |
| Lead** | NA | ND | NA | NA | ND | ND | 9.2 | ND | 15 [a,c] |

AL Action Level
ND Not Detected above the minimum detection limit

NE None Established
NA Not analyzed
* Analyzed November 14, 2006
** Analyzed May 19, 2003
*** Analyzed March 13, 2007
[a] National Primary Drinking Water Regulations, 40 CFR, Parts 141.61 and 141.62
[b] National Secondary Drinking Water Regulations 40 CFR, Sec.143.3. Secondary maximum contaminant levels
[c] 46 WVCSR 12 - Groundwater Protection Rule
[d] 60 WVCSR 3 Table 3B Risk Based Concentrations for Groundwater June 2001
[e] USEPA Region III Risk Based Concentration for Tap Water October 2006

Seven soil borings were advanced in the vicinity of the BTEX Area. Levels of BTEX were observed in four of the samples at 16' – 18' depths. Copper and zinc were detected in all of the soil borings. All soil concentrations were below the EPA Region III RBC levels.

## IV. Interim Measures

All interim measures were completed after discussions with and approval from EPA.

North Inactive Site

Interim measures implemented during the summer and fall of 1992 consisted of construction to improve run-on/run-off control and minimize surface water infiltration. Interim measures also included periodic inspections of the NIS that are ongoing.

The details of these interim measures follow:

a) Construction of a 10-acre earthen cap with a minimum of 18 inches of compacted soil fill material sloped at 2% to 5%.
b) A V-shaped diversion ditch lined with 18 inches of grouted riprap in potential high erosion areas was constructed along the east side of the NIS to intercept surface water from the wooded hillside on the east and divert it away from the disposal area. See figure 4 located in the Appendix of the SB.
c) Approximately 400 feet of Sugarcamp Run were upgraded to stabilize the bank and prevent erosion along the edge of the NIS. The upgrade consisted of widening and regrading the section to form a uniform trapezoidal channel that was lined with 18 inches of grouted riprap.
d) New fencing was placed along the east, southeast, and northeast sections of the NIS.
e) Semiannual inspections of the earthen cap, ditches, fencing, and the Sugarcamp Run stabilized banks to identify maintenance needs.
f) Semiannual groundwater monitoring of the area around the NIS.

A groundwater recovery well was installed in the center of the production area in June 1991 to remediate groundwater impacted by the management of acidic wastes on-site. In December 1991, the well began operation, pumping at 90 to 100 gpm. The recovered water is sent to the Facility's WWTS's dewatering unit for use as spray water in the belt filterpress.

The results of a 1994 hydrogeologic study at the Facility indicated that the existing recovery well is adequate to intercept contaminants from the NIS and protect off-site receptors.

South Inactive Waste Site

Quarterly groundwater sampling of the five monitoring wells installed during the RFI was implemented pursuant to the 1997 CAP Modification. In addition, the earthen cover is inspected during monitoring events to identify potential erosion areas and maintenance needs.

WWTS

The two surface impoundments, although currently active, were identified as SWMUs because of suspected leakage through the primary liner. Therefore, daily monitoring of the leakage rate of the surface impoundments to determine if the monthly rate exceeded certain leakage rates was included in the CAP. Even though it was later determined that the suspected leakage was actually rainwater infiltration, this requirement of the CAP was not modified and monitoring continues.

The UNOX™ Reactors are inspected every two years, the primary clarifiers are inspected annually, and the terminal manhole/neutralization pit and portions of the main process sewer are inspected every two or three years during plant wide electrical shutdown.

## V. Summary of Facility Risks

Based on the location and security of the Facility, potential human receptors of known constituents include workers at the Facility and trespassers. Interim measures were completed at the Facility that included the removal or capping of contaminated soils. New fencing was also installed around the disposal area of the NIS. These measures prevent worker contact with potentially contaminated soils. Since the entire Facility is fenced and Facility access is administratively controlled, exposure to trespassers is unlikely.

Exposure to local wildlife and hunters or fishermen from bioaccumulation of soil constituents in vegetation and animal tissue are also unlikely scenarios given the limited access to SWMUs and the intermittent nature of Sugarcamp Run.

## VI. Scope of Corrective Action

Data for the Waste Drum Storage Areas, Copper Shanty, and the sediments to Sugarcamp Run support a conclusion that no further investigation and/or remediation is warranted in these areas. Any constituents present were below action levels or appear to be naturally occurring.

The SWMUs covered by the proposed corrective measures are the North Inactive Site, South Inactive Waste Site, Waste Water Treatment System, and the BTEX Area.

## VII. Proposed Corrective Measures

Surface water and sediments, as well as soils, were addressed during environmental investigations conducted at the Facility. These media were remediated as necessary through interim measures. As a result, no further action is proposed for surface water, sediment, and soil.

EPA proposes the following corrective measures to remediate groundwater contamination at the Facility. For the Waste Drum Storage Areas, Copper Shanty, and the Sugarcamp Run Sediments, EPA proposes no further action. EPA proposes that institutional controls be implemented at the entire Facility to prohibit the use of groundwater at the Facility for potable purposes, to protect the integrity of the

remedy, and to prevent exposure to contaminants that are still present at the Facility. These institutional controls would remain in place until EPA or WVDEP has determined that the groundwater has been remediated to drinking water standards. The institutional controls would be required by the RCRA permit to be issued by WVDEP, and/or by orders from or agreements with EPA or WVDEP, and may include title notices and land use restrictions through easements and covenants.

For the remaining SWMUs identified in the CAP, EPA proposes the following:

North Inactive Site

An earthen cap and a surface water diversion ditch were constructed at the NIS to limit the amount of surface water runoff to Sugarcamp Run and limit infiltration into the NIS to minimize transport of contaminants to groundwater. EPA proposes that institutional controls be implemented at the NIS to prevent disturbance of the earthen cap, to protect the integrity of the remedy, and to prevent exposure to contaminants that are still present at the Facility. These institutional controls would remain in place in perpetuity, and would be required by the RCRA permit to be issued by WVDEP, and/or by orders from or agreements with EPA or WVDEP, and may include title notices and land use restrictions through easements and covenants. Additionally, continued inspection of the NIS is proposed on the schedule provided below. Deficiencies will be corrected in a timely manner, depending on the nature of the problem. However, in no case will the correction take more than thirty days. If more than thirty days is needed, the Facility will contact WVDEP and outline a plan of action. A heavy rainfall is defined as 3" or more of rain accumulation in a 24-hour period.

Inspection Schedule

| | |
|---|---|
| Earthen Cover | Semiannually and after a heavy rainfall |
| Diversion Ditches | Semiannually and after a heavy rainfall |
| Sugarcamp Run Banks | Semiannually and after a heavy rainfall |
| Monitoring Wells | Each sampling event |
| Brush and Weed Control | Mow annually |
| Reseeding | As needed |

The monitoring wells NF-1 to NF-9 will be sampled semiannually. If no analytes are detected at concentrations greater than their respective MCL for four (4) consecutive events, the sampling frequency will be reduced to annually. If any analyte is detected at concentrations greater than its respective MCL, the sampling frequency will revert to semiannually. Groundwater contour maps indicate that groundwater from the NIS flows southwest to recovery well No. 4315 and is treated at the Facility's waste water treatment system.

The proposed analyte list is as follows:

- Chlorobenzene
- Benzene
- Toluene
- 1,1-Dichloroethane
- Dichloroethylene (cis-1,2)
- Dichloroethylene (trans-1,2)

South Inactive Waste Site

Historical data from the SIS did not reveal any contamination in surrounding surface or subsurface soils. Benzene and dichloroethylene (cis-1,2) concentrations in MW-5704 have been detected intermittently since mid-year 2005. The proposed remedy is to continue monitoring the groundwater and the ground cover. The current groundwater recovery system that intercepts groundwater from the NIS does not capture groundwater from the SIS. However, based on the contaminant levels and distance to the river, and as evidenced by MW-4601, MW-2701, and MW-1601, contaminant levels are expected to naturally attenuate prior to the groundwater reaching the Ohio River. In addition, the groundwater flowpath from the SIS is intercepted by Ranney Wells No. 3 and No. 4 and sent back to the Facility for process water use and eventually treated in the Facility's waste water treatment system.

The monitoring wells installed during the RFI (5701, 5702, 5703, 5704, and 5705) will be sampled quarterly. If no analytes are detected at concentrations greater than their respective MCL for four (4) consecutive quarters, the sampling frequency will be reduced to annually. If any analyte is detected at concentrations greater than its respective MCL, the sampling frequency will revert to quarterly.

The proposed analyte list is as follows:

- Benzene
- Acrylonitrile
- Chlorobenzene
- Methyl Chloride
- Toluene
- Ethylbenzene
- Xylenes
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- 1,1,1-Trichloroethane
- Dichloroethylene (cis-1,2)
- Dichloroethylene (trans-1,2)

MW-2701 will be added to the groundwater sampling program for the SIS to monitor migration toward the Ohio River. If any of the above compounds is detected in MW-2701 above its respective MCL, MW-2701 will be resampled within 30 days. If any of the above constituents is still present in MW-2701 above its respective MCL, WVDEP will be notified within seven (7) days. The Ranney Wells No.3 and No.4 will capture the migrating groundwater to send it back to the process.

If the Ranney Wells are permanently taken out of service, the Facility will notify WVDEP of the action no less than seven (7) days prior to shutdown and will submit to WVDEP, within 30 days of the shutdown, a plan that addresses the development of an alternative source control technique. Upon approval by WVDEP, the Facility will implement the alternative source control plan.

The cover over the existing disposal areas will be inspected on the same frequency as the groundwater sampling. Inspection will include checking for erosion damage and ponding. The location and severity of any noted erosion, along with the corrective action to be taken to address the erosion, will be recorded on an inspection form. Implementation of corrective actions will begin within 30 days of the inspection that documents erosion or ponding on the cover. Each case of erosion or ponding will be evaluated on an individual basis as to urgency and type of repair needed.

WWTS

The surveys and inspections of the main trunk of the process sewer and the concrete tanks have not identified major breaches or releases to date. Continuation of the current inspection frequency is proposed to ensure the WWTS remains structurally sound. Any deficiencies found will be repaired in a timely manner based on the severity of the problem, but will in no case exceed thirty days. If more than thirty days will be required to correct a problem, WVDEP will be notified as to the nature of the problem and the estimated time needed for repair.

Inspection Schedule

| | |
|---|---|
| UNOX Reactors | Every 2 years |
| Primary Clarifiers | Annually |
| Terminal Manhole/Neutralization Pit | During plant wide electrical shutdown |
| Process Sewer | During plant wide electrical shutdown in rotating 1000' sections |

In addition, the leak rate of the two surface impoundments will be monitored for the life of the unit per the following program. The CAP currently defines an action leakage rate at 20 gallons per day (gpd) and a rapid and extremely large leakage rate at 2,500 gpd. When the average daily leakage rate is equal to or greater than 20 gpd but less than 2,500 gpd to either of two leak collection sumps, the CAP requires that the Facility meet certain requirements, including, but not limited to, notifying EPA and the State, sampling, performing quality determination, and, if necessary, submitting a Response Action Plan for EPA's approval. These actions are also required when the average daily leakage rate is equal to or greater than 2,500 gpd; in these cases the Response Action Plan is always required under the terms of the CAP, and EPA may require that the Facility terminate the receipt of waste and empty the unit.

In this SB, EPA proposes to modify the average daily leakage rate requirements of the CAP. EPA proposes a single action leakage rate of 750 gpd for each surface impoundment. The Facility will convert the weekly flow rate from the monitoring data to an average daily flow rate for each sump. The following Facility requirements are proposed:

1. The Facility will monitor for and record on a daily basis the presence of liquids in the leak detection system removal sump.
2. The Facility will analyze the daily monitoring data on a weekly basis to determine if the average leakage rate over the preceding one-month period exceeds the action leakage of 750 gpd to either of the two leak collection sumps of the surface impoundments.
3. When the average daily leakage rate is equal to or greater than 750 gpd, the Facility must:
    a. Within seven (7) days of making the determination, notify the WVDEP that the rate was exceeded.
    b. Immediately sample the leakage in the collection sump to determine its quality. Compare the leakage quality to health based standards (MCLs, EPA Region III RBCs, and WVDEP Standards) and provide the results to WVDEP within thirty (30) days.

c. Discuss with WVDEP whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed. If the concentration of hazardous constituents in the leakage exceeds the health-based standards, and WVDEP determines that a threat to human health and the environment exists, WVDEP may require termination of receipt of waste and emptying the unit.

d. Determine with WVDEP any other short-term and longer-term actions to be taken to mitigate or stop any leaks.

e. Within 30 days after the notification that the action leakage rate has been exceeded, submit to WVDEP information about the leak (e.g., the location, size, and cause of the leak), the results of the above analyses, and the results of the actions taken to date. Additionally, the Facility must, at that time, submit to WVDEP for their approval, a proposal for additional actions planned.

f. If the action leakage rate continues to exceed 750 gpd monthly thereafter, the Facility must submit a report summarizing the results of any remedial actions taken and a proposal for actions planned to the WVDEP for approval.

g. Within 30 days of approval of proposed actions by WVDEP, the Facility shall initiate implementation of those actions.

The proposed revised action daily leakage rate is consistent with EPA guidance and regulation. Pursuant to 40 CFR Section 264.222, which is incorporated by reference in the West Virginia Code of State Rules, at Subsection 33-20-7.2, an action leakage rate is defined as "the maximum design flow rate that the leak detection system (LDS) can remove without the fluid head on the bottom liner exceeding 1 foot." Additionally, EPA recommended, in the Notice of Final Rulemaking to amend its regulations concerning liners and leak detection systems for hazardous waste land disposal units at 57 Fed. Reg. 3474, January 29, 1992, a generic action leakage rate of 1,000 gallons per acre per day for surface impoundments built to meet minimum EPA specifications. Each of the two surface impoundments at the Facility is 0.806 acres. As a result, the appropriate generic action leakage rate would be 806 gpd, which is higher than the proposed revised action daily leakage rate of 750 gpd.

No. 3 Sludge Pond and BTEX Area

A Corrective Measures Survey and a Comprehensive Groundwater Study were conducted in 1994. The studies confirmed that the existing groundwater recovery well installed in 1991 effectively captures groundwater from the NIS, the No.3 Sludge Pond, and the BTEX Area. The proposed remedy is to continue operating the recovery well and monitor groundwater contaminants through routine sampling.

Groundwater elevation data will be collected quarterly along with the river level. The groundwater flow direction will be evaluated yearly to verify that contaminants from the NIS, No.3 Sludge Pond, and BTEX Area are continuing to be captured by the recovery well (4315).

In addition, MW-20 will be sampled quarterly for benzene, chlorobenzene, cis-1,2-Dichloroethylene, and trans-1,2-Dichloroethylene. If any of these compounds is detected in MW-20 above its respective MCL, MW-20 will be resampled. If any of the above constituents is still present in MW-20 above its respective MCL, MW-3203 will be added to the quarterly monitoring program for the same parameters as MW-20 and the pumping rate of the recovery well may be increased to extend the capture zone.

Should any of the indicator parameters be detected in MW-3203 at levels above its respective MCL, the well will be re-sampled within 30 days. If the second sampling confirms the presence of any indicator parameter in this well above its respective MCL, WVDEP will be notified within seven (7) days. The Facility will submit to WVDEP, within 30 days of the sampling that confirms the presence of an indicator

parameter above its MCL, a plan that addresses the development of an alternative source control technique. Upon approval by WVDEP, the Facility will implement the alternative source control plan.

## VIII. Evaluation of EPA's Proposed Remedy

EPA has evaluated the proposed remedy, along with the already initiated interim measures, using the criteria that EPA uses to evaluate proposed final remedies under the RCRA Corrective Action Program. The criteria are considered in two phases. In the first phase, EPA evaluates four remedy threshold criteria as general goals. In the second phase, for those remedies that meet the threshold criteria, EPA then evaluates five balancing criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

A. Threshold Criteria

EPA's evaluation of the threshold criteria follows:

1. Be protective of human health and the environment

The proposed remedy will control the migration of contaminated groundwater over the short-term, will prevent the contaminated groundwater from migrating to exposure points, and will remediate the contaminated groundwater to Maximum Contaminant Level standards, or other risk-based levels, throughout the plume(s) over the long-term. As a result, EPA has concluded that the proposed remedy will be protective of human health and the environment.

2. Attain media cleanup standards

Contamination in the groundwater has declined since the Facility began operating the groundwater recovery system in December 1991. The proposed remedy will remediate the contaminated groundwater to the media clean-up standards which are the Maximum Contaminant Levels, or, if there is no applicable MCL, to risk-based levels.

3. Control the source(s) of releases

With the exception of the wastewater treatment system ("WWTS"), the SWMUs identified at the Facility are no longer in use, and, as a result, the sources of the releases to these areas have been removed or contained. At the North Inactive Site ("NIS"), an earthen cap and a surface water diversion ditch were constructed to limit the amount of surface water runoff to Sugarcamp Run and limit infiltration into the NIS to minimize transport of contaminants to groundwater. With respect to the WWTS, the Facility has rerouted the outlet so that the discharge point is no longer located at the former Sugarcamp Run streambed. The new discharge point is directed by pipe to the Ohio River. An opening along the pipeline a short distance west of the WWTS provides access to collect a water sample that is monitored under the Facility's National Pollution Discharge Elimination System (NPDES) permit (Permit No. WV0000094 Effective 10/25/2003, Expires 6/30/2008). Additionally, the proposed remedy includes daily monitoring and corrective action if the leakage rate is exceeded. EPA has therefore concluded that the sources of the releases have been sufficiently controlled so as to reduce or eliminate, to the extent practicable, further releases of hazardous waste and hazardous constituents that might pose threats to human health and the environment.

4. Comply with applicable standards for waste management

During implementation of the proposed remedy, WVDEP will review the corrective measures work plans, oversee their implementation, and ensure compliance with all applicable federal, state, and local regulations governing the management of waste.

B. Balancing Criteria

Because the proposed remedy consists of interim measures that have already been completed and are operating, and because EPA is satisfied that the proposed remedy is protective of human health and the environment, an evaluation of other alternative remedies is not necessary. EPA is not evaluating among alternatives, and, therefore, a complete evaluation of the balancing criteria is unnecessary. Nonetheless, EPA presents the five criteria below to illustrate the suitability of the proposed remedy:

1. Long-term reliability and effectiveness

The Facility's interim measures have provided a permanent, effective remedy to address the groundwater contamination. Groundwater monitoring is confirming the reliability and effectiveness of the groundwater recovery and treatment system and natural attenuation processes at the Facility. EPA is proposing to keep the recovery and treatment system running until the media cleanup standards are achieved and maintained at the Facility. If the capture zone is determined to be inadequate, the Facility will increase pumping and possibly install additional recovery wells to secure the long-term effectiveness of the remedy.

2. Reduction of toxicity, mobility or volume of wastes

Groundwater monitoring data indicate that the groundwater recovery and treatment system and natural processes at the Facility are reducing the toxicity of the contaminants in the groundwater. Continued monitoring is expected to confirm this trend.

3. Short-term effectiveness

The short-term effectiveness criterion is intended to address hazards posed during the implementation of corrective measures. Short-term effectiveness is designed to take into consideration the impact to site workers and nearby residents during construction. Examples of hazards addressed by this standard include the potential for volatilization of organic contaminants, the spread of contamination through dust generation, and hazardous materials spills resulting from waste loading and transport operations. Facility operating plans such as the health and safety plan, contingency plan, emergency preparedness and prevention plan, and spill prevention, control and countermeasures have been adequate to ensure that all short-term hazards have been addressed such that the interim corrective measures were protective of human health and the environment during short-term remedy implementation. The initial pump and treat system has provided a groundwater capture zone to prevent contaminated groundwater from leaving the site.

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 EPA. No regulatory hurdles were encountered during the implementation of the interim corrective measures, and no future hurdles are anticipated for the continued operation of the interim corrective

measures as final measures. Further, EPA proposes to have the proposed remedy implemented through a module to be included in a new permit to be issued by the WVDEP.

5. Cost

The Facility has already expended capital costs in implementing the above described interim measures at the Facility. The sum of the post-closure costs estimate for the Facility is $5,565,208. The responsible party at the Facility has provided financial assurance to cover post closure costs by use of the financial test to demonstrate financial responsibility for liability coverage and closure and post-closure care as specified in Subpart H of 40 CFR Parts 264 and 265.

## IX. State Acceptance

WVDEP has reviewed and approved this Statement of Basis.

## X. Public Participation

On July 25, 2007 EPA placed an announcement in the Tyler Star News to notify the public of EPA's proposed corrective measures, and of the location of the Administrative Record. Copies of this SB will be mailed to anyone who requests a copy. The Administrative Record, including this SB, is available for review during business hours at the following locations:

Sistersville Public Library
518 Wells Street
Sistersville, WV 26175
Telephone Number: (304) 652-6701

and

U.S. Environmental Protection Agency Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103
Telephone Number: (215) 814-3184
Attn: Mr. William Wentworth (3PM52)

EPA is requesting comments from the public on the corrective measures proposed in this SB. The public comment period will last forty five (45) calendar days beginning July 25, 2007 and ending September 10, 2007. Comments on, or questions regarding, EPA's proposed corrective measures may be submitted to:

Mr. William Wentworth (3PM52)
U.S. EPA, Region III
1650 Arch Street Philadelphia, PA 19103
(215) 814-3184
Email: Wentworth.William@epa.gov

Following the forty five (45) day public comment period, EPA will hold a public meeting on EPA's proposed corrective measures if sufficient public interest indicates that a meeting would be valuable for distributing information and communicating ideas. After evaluation of the public's comments, EPA will

prepare a Final Decision Document and Response to Comments that identifies the final selected remedy. The Response to Comments will address all significant written comments and any significant oral comments raised at the public meeting. This Final Decision Document 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 corrective measures identified by EPA in this SB, EPA may seek additional public comments.

It is expected that the final remedy will be implemented by the Facility owner through a module contained in a permit to be issued by WVDEP.

## XI. References


RCRA Corrective Action Permit, EPA ID WVD 00 432 5353, dated December, 13, 1990

Final Permit Modification, RCRA Corrective Action Permit, EPA ID WVD 00 432 5353, dated September 24, 1997

Verification Investigation Workplan, Union Carbide Chemicals and Plastics Company, Inc. May 14, 1991, revised November 1991

RCRA Facility Investigation Report for North Inactive Site II, ERM-Midwest, Incorporated, August 1992

Verification Investigation Report, Union Carbide and Plastics Company, Incorporated, October 1992

RCRA Facility Investigation Workplan, Revision 1, KEMRON Environmental Services, December 15, 1993, revised May 26, 1994.

RCRA Facility Investigation Report, KEMRON Environmental Services, December 12, 1994

Corrective Action Permit WVD004325353, OSi Specialties, Inc. December 26, 1997

Risk Based Concentration Table, USEPA Region III, October 2006

National Primary Drinking Water Regulations, 40 CFR, Part 141.61 and 141.62

National Secondary Drinking Water Regulations 40 CFR, Sec.143.3. Secondary maximum contaminant levels.

Requirements Governing Groundwater Standards, Title 46 West Virginia Code of State Regulations Series 12, July 1, 2002

West Virginia Remediation and Redevelopment Rule Final Deminimis Table, Title 60 Code of State Regulations Series 3, June 2001